CANCER LINE

More Than Just A Fancy Name

Mention CANCERLINE to your librarian and the world's foremost collection of cancer information is at your disposal. With the help of this computerized data system, you can obtain information on the following:

Cancer Literature

The literature date base, **CANCERLIT**, allows you to survey more than 3,000 biomedical journals for information on your topic of interest. Your search will also alert you to meeting proceedings, monographs, and books published in that area. Informative abstracts averaging 200 words are provided with each citation;

Current Cancer Research

The data base **CANCERPROJ** allows you to retrieve descriptions of current work in any cancer research area. The descriptions, which state research objective, methodology, and experimental results, are supplied for projects underway in 77 countries around the world.

Cancer Therapy Protocols

The **CLINPROT** section of CANCERLINE is designed primarily for clinicians. It provides detailed summaries of currently active experimental protocols for any cancer site, agent, or type.

Ask your biomedical librarian about CANCERLINE.
CANCERLINE is sponsored by the International Cancer Research Data Bank—a program of the National Cancer Institute.

CANCERLINE

Keep Up with the Cancer Literature

Each Month You Can Receive Abstracts Covering Your Specialty Area

- This convenient service — called Auto SDI* — is as near as your nearest biomedical library. Discuss your research interests with the librarian who will design an appropriate search strategy.
- Abstracts of the latest published literature are searched automatically each month and those related to your interests are delivered to you on a regular basis.
- The abstracts you receive are selected from more than 4,000 monthly entries made into CANCERLIT — the extensive cancer literature data base of the National Cancer Institute.

Talk With Your Librarian About the Auto SDI Service TODAY.

*Auto SDI stands for Automatic Selective Dissemination of Information. It is a service provided to you, at minimal cost, by the International Cancer Research Data Bank (ICRDB) — a part of the National Cancer Institute.

READEX FICHE best copy available

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT 15/82/06

NCI/ICRDB/CT15 82/06
PB82-939006

ICRDB
CANCERGRAM

CLINICAL TREATMENT OF CANCER
Radiation Therapy

SERIES CT15 No. 82/06
JUNE, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy *If this Cancergram is useful and valuable, please send your comments to the CIDAC address below, since future editions depend on user satisfaction and user needs:*

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr. M.D.

NEWARK PUBLIC LIBRARY
JUN 22 1982
U. S. GOVT. PUBS.
DEPOSITORY 376

SPECIAL ANNOUNCEMENTS FROM THE ICRDB PROGRAM WILL PERIODICALLY APPEAR AS FILLER PAGES IN THE BACK OF YOUR CANCERGRAMS. WATCH FOR THEM!

In this issue:

- BREAST NEOPLASMS 1-2
- CENTRAL NERVOUS SYSTEM NEOPLASMS 3-5
- DIGESTIVE NEOPLASMS 6-10
- GENITOURINARY NEOPLASMS 11-12
- GYNECOLOGIC NEOPLASMS 13-17
- HEAD AND NECK NEOPLASMS 18-23
- HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS 24-28
- MUSCULOSKELETAL NEOPLASMS 29-31
- RESPIRATORY AND CARDIOVASCULAR NEOPLASMS 32-36
- INSTRUMENTATION AND TECHNOLOGY 37-39
- PRE-CLINICAL STUDIES 40-43

BREAST NEOPLASMS

1. TREATMENT RESULTS IN MALES WITH BREAST CANCER.

Robison R, Montague ED
(c/o Montague) Dept. Radiotherapy, Univ. Texas System Cancer Center, M. D. Anderson Hosp. and Tumor Inst., 6723 Bertner Ave., Houston, TX, 77030

Cancer; 49(2):403-406 1982

Between 1948 and 1978, 39 previously untreated males with breast cancer received curative treatment at M D Anderson Hospital; an additional 30 males were referred for first treatment failure after outside definitive treatment. Of 21 patients

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20. 3173/2:

who were treated with mastectomy, 6 had radical mastec tomy alone, and 15 had radical mastectomy and postoperative irradiation. Of 18 patient who had less than radical surgery and postoperative irradiation to the chest wall and peripheral lymphatic areas, 7 had simple mastectomy, 3 excision biopsy and 8 had needle biopsy. Chest wall recurrences developed in four of six patients with grave signs treated with radical mastectomy, one had a recurrence in an unirradiated chest wall following peripheral lymphatic irradiation and three others had orthovoltage irradiation of 2,400, 3,000 and 4,200 rad. No local or regional recurrences had developed in patients treated with simple mastectomy, excision, or needle biopsy, and radiation therapy to the chest wall and peripheral lymphatics. The 10-yr disease-free survival (Kaplan-Meier) is 50% for the entire group, 70% for patients with histologically or a clinically negative axilla, and 34% for those patients with histologically or clinically positive axilla. Recommendations for the management of primary and regional disease are reviewed. (Author abstract) (5 Refs)

2. IATROGENIC PARESIS OF PERIPHERAL NERVES IN CONNECTION WITH BREAST AMPUTATION AND SUBSEQUENT RADIOTHERAPY.

Zeuke W
Krankenhaus Friedrichroda-Waltershausen, 5812 Waltershausen, W. Germany
Z Aerztl Fortbild (Jena); 75(19):892-893 1981

Iatrogenic paresis as a result of breast amputation and subsequent radiotherapy is reported in 11 cases. Cases included two of postoperative paresis (POP) of the brachial plexus, three of surgery-related paresis (SRP) of the long thoracic nerve, and six of paresis of the brachial plexus due to radiation treatment. Both cases of POP were due to the position of the arm maintained during radical mastectomy; both resolved within 2-3 mo. SRP resulted from damage to the long thoracic nerve during surgery; in two of these patients shrinkage of the capsule of the shoulder joint was noted, along with skeletal distortions. Radiation-induced paresis (RIP) was total in five cases and partial in one case. RIP developed as a late effect 4-13 yr after radiation exposure. The following recommendations are made: (1) reducing abduction of the arm as much as possible during resection of lymph nodes should reduce the risk of POP; (2) passive physiotherapy should reduce shrinkage of the capsule of the shoulder joint; and (3) better calculation of radiation dose fractions, radiation times, and radiation field should reduce the risk of late paresis. (8 Refs) (In GER)

CENTRAL NERVOUS SYSTEM NEOPLASMS

3. CEREBELLAR HEMANGIOBLASTOMAS.

Sung DI, Chang CH, Harisiadis L
Dept. Radiation Oncology, Allegheny Valley Hosp., 1301 Carlisle St., Natrona Heights, PA, 15065
Cancer; 49(3):553-555 1982

Between 1950 and 1976, 24 patients with cerebellar hemangioblastomas received postoperative radiation therapy. In retrospect, the low-dose radiotherapy that was practiced in the 1950 s and early 1960s has been associated with inferior survival rates. Since 1963 and with increased awareness of the effects of radiotherapy, patients receiving high-dose irradiation postoperatively have generally survival longer. Postoperative radiotherapy is used whenever the neoplasm has not been totally excised. This is more likely to occur with solid hemangioblastoma and neoplasms arising in the brain stem. In addition, radiotherapy should be used when the tumor recurs after total excision. The recommended dose is in the range of 4,500-5,000 rad in 4 1/2-5 weeks. (Author abstract) (11 Refs)

4. PRIMARY MALIGNANT CEREBELLAR ASTROCYTOMAS IN CHILDREN: A SIGNAL FOR POSTOPERATIVE CRANIOSPINAL IRRADIATION.

Salazar OM
Div. Radiation Oncology, Univ. Rochester Cancer Center, P.O. Box 647, Rochester, NY, 14642
Int J Radiat Oncol Biol Phys; 7(12):1661-1665 1981

Therapeutic results and natural history of 13 cases of malignant astrocytoma of the cerebellum (MAC) are reported. Eight cases involved primary pure malignant astrocytomas; five cases involved mixed tumors in which the malignant astrocytoma component predominated. All tumors had been surgically and histologically confirmed and had been treated with 60Co irradiation. Seven patients were treated with craniospinal irradiation (CSI) consisting of 4,500 rads to the whole brain, a 1,000 rad booster to the posterior fossa, and 3,000-4,000 rads to the spinal axis given over five weekly treatments. Six patients received only cranial irradiation (CI); four of these received only partial CI. Median age of all patients was 9.8 yr. Male:female ratio was 1.6. Median survival (MS) was 20 mo. MS for patients receiving CI was 10 mo compared with 48 mo for patients receiving CSI. At reporting time six CSI patients were alive with no evidence of disease; one CI patient was alive with disease. All other patients had died. Five CI patients developed spinal subarachnoid dissemination after a median 9.6 mo. None of the CSI patients developed spinal metastases. Results suggest that MAC should be treated by CSI, rather than by more restricted radiotherapy. (26 Refs)

5. ULTRA-RAPID HIGH DOSE IRRADIATION SCHEDULES FOR THE PALLIATION OF BRAIN METASTASES: FINAL RESULTS OF THE FIRST TWO STUDIES BY THE RADIATION THERAPY ONCOLOGY GROUP.

Borgelt B, Gelber R, Larson M, Hendrickson F, Griffin T, Roth R
Dept. Radiation Therapy, Univ. Texas System Cancer Care Center, M. D. Anderson Hosp. and Tumor Inst., Houston, TX, 77030
Int J Radiat Oncol Biol Phys; 7(12):1633-1638 1981

Ultra-rapid high dose irradiation (UHDI) was compared with more prolonged high dose irradiation (PHDI) in two sequential Phase III cooperative studies of 1902 patients with brain metastases of breast, lung, and other cancers. In the first study patients received either 1,000 rads in a single dose or 3,000 or 4,000 rads in 2-4 wk. Results from 155 patients (26 in the 1,000 rad arm and 112 in the 3,000-4000 rad arm) were evaluated. In the second study patients received 1,200 rads in two days or 2,000 rads in 1 wk. Results from 64 patients (33 in the 1,200 rad arm and 31 in the 2,000 rad arm) were evaluated. Overall improvement rates were 47% in the first study and 46% in the second. UHDI produced improvement in neurologic function, promptness of improvement, morbidity rates, and median survival times comparable to those produced by PHDI. Duration of improvement, time to progression of neurological status, and rate of neurological improvement were generally less among patients receiving 1,000 or 1,200 rads than in patients receiving 3,000 or 4,000 rads. Results suggest that UHDI is not as effective as PHDI as palliative treatment of brain metastases; UHDI is recommended only for patients who cannot tolerate more protracted therapy. (7 Refs)

DIGESTIVE NEOPLASMS

6. SMALL CANCERS OF THE ESOPHAGUS. A SERIES OF 31 CASES.

Peix JL, Burnon D, Baulieux J, Boulez J, Donne R, Maillet P
Clinique Chirurgicale A, Hopital de la Croix-Rousse, 69317 Lyon Cedex 1, France
Lyon Chir; 77(6):345-348 1981

Small cancer of the thoracic segment of th esophagus was diagnosed in 31 patients (29 men and 2 women, av age 58 yr). The symptoms included dysphagia in 26 patients, epigastric or retrosternal pains in 10 and dyspepsia in 3. The x-ray examination gave negative findings in 2/31 patients. Endoscopy with Lugol's solution revealed all tumors. Esophagogastrectomy by abdominal and thoracic approach was performed in 30 cases, and the colon was used for reconstruction in 1 patient with esophageal stenosis. The postoperative mortality rate was 1/31. Nine of the 31 patients were submitted to preoperative telecobalt therapy (total dose 2,000-4,000 rads, mean 3000 rads), 8 others to postoperative telecobalt therapy (mean dose 4,500 rads). Carcinoma in situ was found in 4 patients, microinvasive carcinoma (Stage I) in 11; Stage II was diagnosed in 14 patients, and no tumor was found at surgery in 2 patients subjected to preoperative radiotherapy. The tumor size was below 4 cm in 30 patients, and it was 7 cm in 1. None of the patients had lymph node metastases. The 1-, 3-, 5-and 10-yr survival rates were 26/27, 11/21, 9/18 and 6/7, respectively. The findings indicate that the prognosis of small (early) esophageal cancer is better that of esophageal carcinoma diagnosed at an advanced stage. (15 Refs) (In FRE)

7. BLEOMYCIN AND RADIOTHERAPY IN NONRESECTABLE THORACIC OESOPHAGEAL CARCINOMA.

Appelqvist P, Silvo J
Dept. Radiotherapy, Univ. Central Hosp., Haartmanikatu 4, 00290 Helsinki 29, Finland
Strahlentherapie; 157(6):371-374 1981

The survival rates of nonresectable thoracic esophageal carcinoma patients were studied in 50 patients treated by radiotherapy and by a combination of radiotherapy and bleomycin. The patients of two series were very similar. The 1-yr survival rates were 21 and 0%, in radiotherapy and in radiotherapy with bleomycin group, respectively. In the literature, there were only few reports from survival figues of patients with esophageal carcinoma treated with bleomycin in combination with radiotherapy. The authors concluded that the combination of bleomycin and radiotherapy has very limited effect on advanced esophageal carcinoma. The survival rate after this combination therapy is not better than with radiotherapy alone, if bleomycin and radiotherapy are used with reduced doses and without severe complications. (Author abstract) (30 Refs)

8. OXYGEN PRESSURE IN STOMACH ADENOCARCINOMA.

Kir'ianov IIu, Sutiagin AG, Alipchenko LA
Res. Roentgenoradiological Inst., Moscow, USSR
Med Radiol (Mosk); 26(11):12-15 1981

Oxygenation of tumor cells was studied in 57 patients with adenocarcinoma of the stomach. All patients were in Stage III of the disease. Of 67 patients, 50 received surgery alone (Group 1) and 17 received preoperative distant radiotherapy (single dose 200 or 400 rads, 5x/wk, total dose 4,000-4,500 or 2,000 rads) and surgery (Group 2). Surgery was performed 1.5 mo after the completion of radiotherapy. Polarographic measurements of oxygen pressure (pO2) showed the presence of anoxic regions in nonirradiated adenocarcinomas. The av pO2 value in Group 1 was 23 mm Hg, compared with 29 mm Hg in Group 2. The number of hypoxic regions in irradiated adenocarcinomas was small but for nonirradiated tumors it was bigger. Improved oxygenation of irradiated adenocarcinomas could be explained by inhibition of oxygen consumption in irradiated cells. (7 Refs) (In RUS)

9. 2,045 CASES OF RECTAL CANCER TREATED BY SOLE, PREOPERATIVE OR PALLIATIVE ENDOCAVITARY CONTACT RADIOTHERAPY. STATISTICAL RESULTS WITH THE HELP OF A MODERN CLASSIFICATION OF CARCINOMA OF THE RECTUM.

Parturier-Albot M, Albot G
8, rue des Saints-Peres, 75006 Paris, France
Ann Gastroenterol Hepatol; 17(5):313-320 1981

Patients with rectal cancer were treated with endocavitary contact radiotherapy (ERT) alone or combined with surgery. Palliative ERT was administered to other patients. Cancers were classified as alpha (localized in the mucosa), beta (spread to muscularis mucosa), gamma1 (spread to submucosa), gamma2 (spread to muscularis, Duke's Class A), and delta (spread to serosa, Duke's class B). ERT alone resulted in cures of 211/214 type alpha cancers, 316/318 beta, 548/604 gamma1, 108/532 gamma2, 5/377 delta, and 1,188,2,045 overall. For type alpha, beta, gamma1, gamma2, and delta rectal cancer patients treated with combined ERT and surgery, cures were obtained in 1/1, 1/1, 48/48, 375/417, 241/318 patients, respectively. Overa ll, radiosurgery produced cures in 666/785 patients. Cures observed in 279 aged or handicapped patients treated with contact radiotherapy alone did not significantly differ from general results: type alpha, 100%; type beta, 100%; type gamma1, 77.33%, type gamma2, 16.47%, and type delta, 3%. In 165 operable aged or handicapped patients, combined used of ERT and surgery produced results similar to those found for the general population. Palliative ERT in 41 patients produced improvements in their general state of health following each ERT application; patient survival was increased. (45 Refs) (In FRE)

10. RADIOTHERAPY OF UNRESECTABLE PANCREATIC CARCINOMA: A SIX YEAR EXPERIENCE WITH 104 PATIENTS.

Whittington R, Dobelbower RR, Mohiuddin M, Rosato FE, Weiss SM
Dept. Radiation Therapy and Nuclear Medicine, Thomas Jefferson Univ. Hosp., Philadelphia, PA, 19107
Int J Radiat Oncol Biol Phys; 7(12):1639-1644 1981

Results of treatment of 104 cases (66 men and 38 women, 38-82 yr old, median 62 yr old) of unresectable carcinoma of the pancreas are reported. Thirty-eight patients received palliative radiotherapy (RT); 20 of them also received chemotherapy (CHT). Palliative therapy produced control of primary tumor in 3/35 patients, palliation of symptoms in 65%, complete pain relief in 45%, and partial pain relief in 9%. Median survival was 5 mo. Death resulted in 15 cases from uncontrolled primary tumor; one patient was alive after 10 mo. Sixty-six patients received precision high-dose radiotherapy (PHD); 18 of the patients also received 125I implants (IP). PHD consisted of 5,000 rads to the tumor and surrounding area delivered over 5.5 wk, followed by 1,500 rads delivered to the tumor only. Seven patients receiving IP also received 500 rads as a single preoperative dose on the day of surgery or 1 day before. IP was calculated to deliver 12,000 rads to the tumor over the period of complete decay. Local control of tumor was achieved in 33% of patients receiving only PHD and in 93% of those receiving PHD and IP. Adjunctive chemotherapy did not improve local control in the PHD-only group. Only 1/7 IP patients receiving preoperative irradiation (PI) developed implant-related metastases, compared with 5/7 not receiving PI. Palliation of symptoms was comparable in all groups. Results indicate the possibility of local control of pancreatic carcinoma with doses greater than 6,000 rads using IP. (12 Refs)

GENITOURINARY NEOPLASMS

11. RADIOTHERAPY AND CYSTECTOMY FOR T3 BLADDER CARCINOMA.

Hall RR, Heath AB
Dept. Urology, Freeman Hosp., High Heaton, Newcastle upon Tyne NE7 7DN, England
Br J Urol; 53(6):598-601 1981

The survival of 102 patients with category T3 transitional cell carcinoma of the bladder treated by pre-operative radiotherapy and radical cystectomy has been analyzed according to the degree of down-staging of tumor as assessed by the depth of infiltration of cancer in the operative specimen. Five-yr survival was 60% for patients showing evidence of down-staging, compared with 30% when persistent deeply invasive tumor was present at the time of cystectomy. Analysis of available data suggests that survival of patients with category T3 bladder cancer is determined by the response of the tumor to initial radiotherapy rather than the dose of radiotherapy or the addition of cystectomy. Despite radical treatment, the survival of patients with locally advanced bladder cancer is poor; as an alternative, more effective forms of therapy should be sought. (Author abstract) (9 Refs)

12. HALF-BODY IRRADIATION IN THE TREATMENT OF METASTATIC PROSTATIC CARCINOMA.

Rowland CG, Bullimore JA, Smith PJ, Roberts JB
(c/o Smith) Dept. Urology, Bristol Royal Infirmary, Marlborough St., Bristol BS2 8HW, England
Br J Urol; 53(6):628-629 1981

High dose radiation therapy given as a single fraction to the upper and lower halves of the body gives effective palliation for metastatic solid tumors. This treatment modality appears to be particularly effective in tumors which may have a slow doubling time such as carcinoma of the prostate. Fifty-two patients with metastatic carcinoma of the prostate involving the skeletal system have received half-body irradiation. All had prior treatment with additive hormones or orchiectomy, and the majority had received localized irradiation and/or chemotherapy. Significant immediate pain relief was achieved in 42 out of 52 patients (80%). This pain relief was maintained until death in 29 out of 43 patients (67%). Pain relief in responders appears to occur within 24 to 48 hr of treatment. (Author abstract) (5 Refs)

GYNECOLOGIC NEOPLASMS

13. THE MOVING-STRIP TECHNIQUE IN THE TREATMENT OF OVARIAN CANCER.

Hawliczek R, Kogelnik HD, Karcher KH, Binder W, Szepesi T
Universitatsklinik fur Strahlentherapie ung Strahlenbiologie Wien, Alser Strasse 4, A-1097 Wien, Austria
Wien Klin Wochenschr; 93(22):695-701 1981

Radiotherapy using the moving-strip technique (MSRT) in the treatment of ovarian cancer is discussed. MSRT is recommended as the principle postoperative therapy in Stages Ia, Ib, and II and asymptomatic Stage III. MSRT after successful polychemotherapy is recommended for Stages Ic and IIc and symptomatic Stage III with residual tumor larger than 2 cm. Prognosis depends on completeness of surgery, patient age, histology, tumor grade, and effectivenes of treatment. (36 Refs) (In GER)

14. COMBINATIONS OF RADIOTHERAPY (EXTERNAL AND CURIETHERAPY) ALONE IN CANCERS OF THE CERVIX.

Horiot JC, Ibrahim E, Aupecle P, Chaplain G, Sentenac I, Nabid A
Unite de radiotherapie, Centre Georges-Francois Leclerc, rue du Professeur-Mario n, F 21034 Dijon Cedex, France
Rev Med Suisse Romande; 101(10):783-789 1981

Radiotherapy (RT) alone can be used to treat certain types of cervix cancer. Guidelines used in determining the combination of external radiation (ER) and curietherapy (CT) administered include the following: ER is always administered prior to CT, the relative proportion of ER and CT is determined by the volume of the tumor and the probability of lymphatic metastasis, the amount of ER used depends on the tumor volume and the probability or certainty (lymphography-positive cases) of lymphatic metastasis. Combinations of RT allow the precise individualization of treatment. Advantages of RT and RT plus surgery are considered. Surgery should be used in cases of extensive intra-epithelial carcinomas, microinvasive carcinomas, certain endocervical cancers, and neoplasms with invasion of the cervix and vagina not suited to brachytherapy. Compilation of results of previously reported studies allowed the analysis of the efficacy and safety of RT alone in the treatment of 818 patients with cervix cancer. In Stage I and IIA patients, mild or severe complications were produced by RT in 15% and 3% patients, respectively. Digestive complications were encountered in 10% of the RT-treated patients. (no Refs) (In FRE)

15. RESULTS OF RADIATION AND COMBINED THERAPY OF CERVIX CANCER IN PATIENTS YOUNGER THAN 35 YEARS.

Vishnevskaia EE
Res. Inst. Oncology and Medical Radiology, Minsk, USSR
Med Radiol (Mosk); 26(11):15-19 1981

Results of treatment in 134 patients less than 35 yr old with cervix cancer are reported. Majority of the patients had squamous cell carcinoma; 80 were in Stage I, 39 were in Stage II, 13 were in Stage III, and 2 were in Stage IV. Sixty-nine patients in Group 1 were subjected to Wertheim's operation in combination with pre- or postoperative continuous or split-course irradiations; 65 patients in Group 2 were subjected to distance and interstitial radiotherapy alone. Complications were observed in 50% of the patients from Group 1 and in 32.7% of the patients from Group 2. Av duration of hospital stay in Groups 1 and 2 was 59.9 and 46.6 days, respectively.

The 5-yr survival rates in Group 1 were 92.9% for Stage I, 50% for Stage II, and 50% for Stage III. The corresponding survival rates in Group 2 were 100%, 83.3%, and 50%, respectively. (2 Refs) (In RUS)

16. THE IMPACT OF LYMPH NODE STATUS ON SURVIVAL IN CERVICAL CARCINOMA.

Hammond JA, Herson J, Freedman RS, Hamberger AD, Wharton JT, Wallace S, Rutledge FN
Ontario Cancer Foundation, Victoria Hosp., 375 South St., London, Ontario, Canada
Int J Radiat Oncol Biol Phys; 7(12):1713-1718 1981

The relationship between results of lymphangiography (LAG) and other parameters and survival time was studied retrospectively in 215 patients with cervical carcinoma (CC) in Stages IB-IIIB. LAG results were classified as positive (LAG+) or negative (LAG-). All patients received external radiotherapy using a standard 15 x 15 cm pelvic field or, in patients with metastatic lymph nodes, an extended field. Internal radium implants were used when possible. Patients with large pelvic tumors who were LAG- were randomized to receive standard-field or extended-field external irradiation. Correlation of staging and LAG factors indicated three risk groups: good risk patients were Stage IIA or IIB and LAG- and av disease-free survival time (DFS) was greater than 92 Intermediate risk patients were Stage IIB and LAG+, or Stage IIIA or B and LAG-; av DFS was 31 mo. Poor risk patients were Stage IIIA or B and LAG+; av DFS was 11 mo. Among all three risk groups DFS was longer for those patients receiving radium implants. DFS was increased in LAG+ patients but not LAG- patients by the use of an extended radiation field. The 2-yr failure rate was 69.0% for LAG+ patients and 31.3% for LAG- patients. Persistent disease was found in 22.7% of LAG+ patients and 10.7% of LAG- patients. LAG status correlated with stage of disease. Results indicate that LAG is useful for defining high-risk patients with cervical carcinoma. (9 Refs)

17. LOCAL TUMOR CONTROL AND THE SUBSEQUENT INCIDENCE OF DISTANT METASTATIC DISEASE.

Anderson P, Dische S
(c/o Dische) Marie Curie Res. Wing Oncology, Regional Radiotherapy Centre, Mount Vernon Hosp., Northwood, Middlesex HA6 2RN, England
Int J Radiat Oncol Biol Phys; 7(12):1645-1648 1981

The relationship between local tumor control (LTC) and subsequent incidence of metastases was studied in 73 patients with carcinoma of the bladder (CB) and in 122 patients with carcinoma of the uterine cervix (CC) in Stages IIB, III, and IV. Patients in both groups were randomized to radiotherapy in hyperbaric oxygen or in air. CB patients received radiation to the bladder and lymphatic drainage of the true pelvis. CC patients received radiation to the cervix and body of the uterus, true pelvis, and iliac nodes. A strong positive correlation was found between LTC and survival. A life table of patients with CC showed a plateau of metastasis-free survival (MFS) at approx 70% for patients in whom LTC had been achieved, compared with a plateau at approx 10% for those in whom LTC was not achieved. Similar results were shown by a life table of patients with CB. Eighteen of 20 patients with CC who had never been classified as tumor-free during treatment died within the first 12 mo of treatment. Data suggested that most patients with failure of LTC would have developed metastases if they had survived long enough. Although detecting a reduction in the incidence of metastases as a result of improved LTC would be difficult, the importance of LTC in preventing metastases is stressed. (4 Refs)

HEAD AND NECK NEOPLASMS

18. MALIGNANT INTRAOCULAR TUMORS.

Brady LW, Shields JA, Augsburger JJ, Day JL
Dept. Radiation Therapy and Nuclear Medicine, Hahnemann Medical Coll. and Hosp., MS-200, 2300 North Broad St., Philadelphia, PA, 19102
Cancer; 49(3):578-585 1982

The role of the radiation therapist in the management of malignant intraocular tumors is changing. With more active identification of malignant intraocular tumors, and a better recognization of the manner in which one can deal with problems of radiation sensitivity, radiation techniques of all sorts will be more actively employed in the treatment of these tumors. Special techniques must be selected for appropriate circumstances of management in order to diminish to an absolute minimum the impact upon the lens, the impact upon visual acuity and the impact upon the cornea. Cobalt-60 plaques are being used more commonly in the treatment of melanomas of the choroid, and the role for radiation therapy in the management of retinoblastoma is changing markedly to where it may be used as the primary treatment program rather than enucleation. In metastatic disease involving the uveal tract, radiation therapy has assumed the most important role for management. Chemotherapy should be considered as an active adjuvant in the management of not only those individuals with retinoblastoma but also in those identified circumstances where metastases to the uveal tract are being treated. The role for chemotherapy or immunotherapy in malignant melanoma is unclear. (Author abstract) (26 Refs)

19. LYMPHADENECTOMY AS A DEFINITIVE MANAGEMENT OF THE RESIDUAL LESION IN THE NECK AFTER RADIOTHERAPY FOR NASOPHARYNGEAL CANCER - AN ANALYSIS OF 48 CASES.

Xu G, Li Q, Hu Y, Cai W, Qin D, Yan J, Wu X, Gu X
Cancer Inst., Chinese Acad. Medical Sciences, Beijing, People's Republic of China
Zhonghua Zhongliu Zazhi; 3(2):123-125 1981

The residual lesion in the neck after radiotherapy for nasopharyngeal cancer is difficult to treat, either by further radiotherapy or by chemotherapy. Results of treatment by lymphadenectomy of 48 cases during or after radiotherapy are described. Local lymph node excision was performed in 43 cases (40 complete, 3 partial) and in bloc dissection in 5 cases. Of 34 cases followed for over 2 yr the 3-yr survival rate was 60% (18/30) and the 5-yr survival 50% (11/22). Postoperatively only one case in this series developed local recurrence and there were no serious complications. It was concluded that lymphadenectomy under certain conditions can be safe and effective in treating residual cervical lesion after radiotherapy for nasopharyngeal carcinoma. (no Refs) (In CHI)

20. FAST NEUTRONS IN THE TREATMENT OF SALIVARY GLAND TUMORS.

Kaul R, Hendrickson F, Cohen L, Rosenberg I, Ten Haken R, Awschalom M, Mansell J
Dept. Radiation Oncology, Michael Reese Hosp. and Medical Center, 29th St. and Ellis Ave., Chicago, IL, 60616
Int J Radiat Oncol Biol Phys; 7(12):1667-1671 1981

Results of fast neutron irradiation (NI) in 22 patients in an ongoing Phase II study are reported. Median patient age was

55 yr (range 24-79 yr). Tumors originated in a major salivary gland in 17 cases (including 15 in parotid and 2 in submandibular glands) and in a minor salivary gland in 5 cases. All tumors were carcinomas except one mixed type. Treatment was planned on an individual basis. NI delivered 24.0 Gray over a period of 6 wk to an area including at least a 1 cm margin around the tumor. Four patients received an initial wide-field irradiation of 45.0 Gray with photons followed by a booster dose of 7.5 Gray in five fractions over 2-3 wk. Of seven patients receiving NI as primary therapy, one showed recurrence in the target volume and pulmonary metastases (PM), one patient developed only PM, and five patients were alive and tumor-free after 1-3 yr. Of three patients with postoperative residual disease who received NI, one died of persisting disease after 3 mo, and two were alive and tumor-free after 2 yr. Of six patients receiving NI after two to nine surgical excisions, five were alive and tumor-free after 1-3 yr and one patient with a mixed-type tumor was alive with 20% regression of a pharyngeal mass and disappearance of neck mass after 27 mo. Of three patients treated with NI after surgery and conventional irradiation, all died within 1 yr of treatment. Of four patients receiving NI boosting after photon irradiation, only one was alive and tumor-free after 3 yr. Results suggest improved local control of salivary tumors with NI. (15 Refs)

21. DISCRIMINANT ANALYSIS OF RADIATION THERAPY PROCEDURES: THE PATTERNS OF CARE PROCESS SURVEY FOR CARCINOMA OF THE LARYNX.

MacLean CJ, Davis LW
Radiation Oncology Study Center, American Coll. Radiology, Philadelphia, PA
Cancer; 49(2):229-233 1982

Discriminant analysis was applied to larynx data from the Patterns of Care Study (PCS) in order to evaluate and classify radiation therapy procedures. Since PCS has recorded information on a large number of separate procedures, a method was needed to treat them coherently. Discriminant analysis provided such a method through a comprehensive score of performance. The particular discriminant score used was calculated from the contrast between facilities with and without radiation therapy resident training programs. Because residents drastically affect the practice of radiation therapy in a facility, this factor provided a foundation for analyzing the procedures themselves. Results of the discriminant analysis were used to derive a condensed list of generalized procedural criteria which contains almost all the discrimination information of the original procedures and which elucidates their relative importance and the relat ions among them. (Author abstract) (10 Refs)

22. THE VALUE OF ADJUVANT MISONIDAZOLE IN THE DEFINITIVE IRRADIATION OF ADVANCED HEAD AND NECK SQUAMOUS CANCER: AN RTOG PILOT STUDY (78-02).

Fazekas JT, Goodman RL, McLean CJ
Dept. Radiation Therapy and Nuclear Medicine, Thomas Jefferson Univ. Hosp., Philadelphia, PA, 19107
Int J Radiat Oncol Biol Phys; 7(12):1703-1708 1981

Local tumor response and neurotoxic effects of misonidazole (2-nitro-1-imidazole: MA) were determined in a Phase II nonrandomized study. Fifty patients (39 men, 11 women, 31-78 yr old, av age 56 yr) with squamous cancers of the oral cavity, oropharynx, supraglottic larynx, or hypopharynx received MA as an adjunct to radiotherapy (RT). MA (2.5 g/square meter, reduced to 2.0 g/square meter after analysis of the first 30 patients) was administered, followed by RT (250 rads 4 hr after MA dose and 210 rads 4 hr after the first RT dose). Three subsequent RT doses of 180 rads were given, for a weekly dose of 1,000 rads. Forty-six patients were evaluated, of whom 41 completed at least three courses of MA, and 36 completed the minimum RT and at least three courses of MA. Complete disappearance of tumor was achieved in 50% of all patients and in 67% of those completing therapy. The combined partial and complete response rate was 89% among those completing therapy. No clear correlation was found between serum MA or total MA dose and toxicity or response, except in a comparison of patients with complete response and those with no response. Toxicity was limited to the nervous system; one third of patients developed mild or moderate peripheral neuropathy and an equal number developed nausea and/or vomiting after po MA administration. Of 36 patients completing therapy, 17 were alive and free of disease at 9-24 mo, 10 were alive with disease, 3 died of cancer, 3 died of other causes, and 3 are of unknown status. Results warrant a Phase III study. (17 Refs)

23. CLINICAL TRIAL OF CORYNEBACTERIUM PARVUM (INTRA-LYMPH-NODE AND INTRAVENOUS) AND RADIATION THERAPY IN THE TREATMENT OF HEAD AND NECK CARCINOMA.

Cheng VS, Suit HD, Wang CC, Raker J, Kaufman S, Rothman K, Walker A, Mcnulty P
Joint Radiation Oncology Center, Univ. Health Center of Pittsuburgh, 3601 Fifth Ave., Pittsburgh, PA, 15213
Cancer; 49(2):239-244 1982

Fifty-seven patients with previously untreated squamous cell carcinoma of the head and neck region of all clinical stages were entered a trial to evaluate the effectiveness of Corynebacterium parvum combined with radiation therapy in improving local and survival results. Twenty-nine patients were randomized to receive radiation therapy alone, and 28 patients were randomized to receive radiation therapy combined with C parvum. The C parvum was administered into the tumor-bearing lymph nodes of the neck or into the cervical node region in non-node-positive patients (4 mg/m2) and by intravenous routes (at 2, 2, 4, 4 and 4 mg/M2) at days-10,-7, and-3 before, and at +7 and +14 days after the start of radiation therapy. The study began in July 1975 and was terminated after 2 1/2 yr of patient accession. The statistical analysis showed that those receiving C parvum were not doing better than controls and, in fact, in some subgroups there was concern that they might be doing less well. Pertinently, analysis showed that those receiving C parvum would not experience the 25% point improvement in disease-free survival frequency which had been stipulated in the design of the protocol. (Author abstract) (29 Refs)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

24. THE COMPARISON OF TOTAL BODY IRRADIATION VS CHLORAMBUCIL AND PREDNISONE FOR REMISSION INDUCTION OF ACTIVE CHRONIC LYMPHOCYTE LEUKEMIA: AN ECOG STUDY. PART I: TOTAL BODY IRRADIATION - RESPONSE AND TOXICITY.

Rubin P, Bennett JM, Begg C, Bozdech MJ, Silber R
Univ. Rochester Cancer Center, Rochester, NY
Int J Radiat Oncol Biol Phys; 7(12):1623-1632 1981

Total body irradiation (TBI) and chemotherapy (CPT) with chlorambucil (CA) and prednisone (PN) were compared for induction of remission in 52 patients with active chronic lymphocytic leukemia (CLL). Under Plan I 11 patients received 150 rads TBI/course (10 rads, 3 x/wk for 5 wk). Seven of 11 patients completed one course, three patients completed two courses, and one completed three courses. Under Plan II 15 patients received 50 rads/course (5 rads/day, 5 days/wk for 2 wk). Fourteen patients completed one course, 8 patients completed two courses, 2 patients completed three courses, and 1 patient completed five courses. Twenty-six patients received CPT (30 mg CA/square meter po 1 x/2 wk for 18 courses) or 9 mo, plus 80 mg PN for 5 days every 2 wk for 18 courses. No complete remissions (CR) were achieved by TBI; partial remissions were achieved in 73% of Plan I patients and 47% of Plan II patients. Life-threatening depression of granulocytes and/or platelets occurred in 73% of Plan I patients and 43% of Plan II patients. CPT achieved CR in 23% of cases and PR in 54%. CPT thus produced an overall response rate of 77% compared with 58% for TBI. Duration of response was 18 wk for TBI and 45 wk for CPT. Median survival times were not significantly different (136 wk for TBI and 135 wk for CPT). Results indicate that CPT is superior to TBI for improving the response rate, number of patients in remission, and median duration of response. (25 Refs)

25. TREATMENT OF CHRONIC GRANULOCYTIC LEUKEMIA WITH CHEMORADIOTHERAPY AND TRANSPLANTATION OF MARROW FROM IDENTICAL TWINS.

Fefer A, Cheever MA, Greenberg PD, Appelbaum FR, Boyd CN, Bruckner CD, Kaplan HG, Ramberg R, Sanders JE, Storb R, Thomas ED
Div. Oncology, BB1025 Health Sciences, Univ. Washington, Seattle, WA, 98195
N Engl J Med; 306(2):63-68 1982

Treatment of Philadelphia (Ph)-positive chronic granulocytic leukemia (CGL) by supralethal chemoradiotherapy and marrow transplantation from an identical twin is reported. Twelve patients (13-46 yr old) in the chronic phase of CGL and 10 (11-54 yr old) in the terminal phase of CGL received 920-1000 rad of 60 Co total body irradiation in a single exposure. Bone marrow from donor iliac crests was infused in within 24 hr of irradiation. Results for patients in the chronic phase showed hematopoiesis restoration and complete clinical and cytogenic remission with disappearance of all Ph positive metaphases in all 12 patients. Marrow engraftment was detectable histologically by 2 wk after transplantation. The absolute granulocyte count rose to greater than 500 by days 12-33, counts greater than 20,000 without supporting platelet transfusions were common by days 13-32. Side effects and complications included gastrointestinal toxicity, rashes, mild liver function abnormalities, fever (greater than 38 C), viral infections, dry mouth, and amenorrhea. Eight patients remain in complete remission 21-65 mo (median greater than 30 mo) after transplanation. Six terminal phase CGL patients entered complete remission and four died 10-17 days after transplantation. Cytogenic evaluation after transplantation showed no detectable pH positive metaphases in 4 patients (3 ultimately had relapses); 3 still had Ph positive metaphases. Apparently blast crisis is delayed and survival is prolonged by twin-marrow transplantation. (30 Refs)

26. SANCTUARY THERAPY: A RANDOMIZED TRIAL OF 724 CHILDREN WITH PREVIOUSLY UNTREATED ACUTE LYMPHOBLASTIC LEUKEMIA. A REPORT FROM CHILDRENS CANCER STUDY GROUP.

Nesbit ME, Sather H, Robison LL, Donaldson M, Littman P, Ortega JA, Hammond GD
Children's Cancer Study Group Operations Office, 1721 North Griffin Ave., Los Angeles, CA, 90031
Cancer Res; 42(2):674-680 1982

Between 1972 and 1974, Children's Cancer Study Group enrolled 724 children with newly diagnosed acute lymphoblastic leukemia on a single randomized clinical trial. Study CCG-101 was designed to test four types of presymptomatic central nervous system and sanctuary therapies consisting of (a) 2,400-rad craniospinal radiation therapy (RT) plus 1,200-rad extended-field RT, which included the liver, spleen, kidneys, lower abdomen, and gonads; (b) 2,400-rad craniospinal RT; (c) 2,400-rad cranial RT plus intrathecal methotrexate (it MTX); and (d) it MTX alone. Patients all received a 28-day induction course of vincristine, prednisone, and L-asparaginase and were maintained subsequently on a regimen consisting of daily 6-mercaptopurine, weekly MTX, and monthly pulses of vincristine and prednisone. Patients treated with six doses of it MTX alone had a significantly higher incidence of central nervous system relapse than did patients treated with 2,400-rad craniospinal RT plus 1,200-rad abdominal RT, 2,400-rad craniospinal RT, or 2,400-rad cranial RT plus it MTX. There was no significant difference in marrow remission duration or survival of the treatment groups. There appears to be a benefit with regard to length of bone marrow remission and survival for patients with initial white blood counts greater than 20,000/cu mm treated with cranial RT plus it MTX. The majority of the patients remaining on study have now discontinued maintenance therapy. The 8-yr overall estimated survival rate on this study is 56%, and the disease-free survival rate is 52%. (Author abstract) (27 Refs)

27. FREQUENCY OF COMPLICATIONS AND RADIOTHERAPEUTIC PROGRESS IN HODGKIN'S DISEASE.

Abbatucci JS
Centre Francois Baclesse, Route de Lion-sur Mer, 14021 Caen Cedex, France
Sem Hop Paris; 57(41/42):1761-1766 1981

Local and general complications resulting from the radiotherapeutic treatment of Hodgkin's disease (HD) are described. Max dosages tolerated in regions irradiated in the treatment of HD are reported. Complications observed after radiotherapy for HD and non-HD lymphomas (380 regional irradiations) included myelopathy (1), carditis (2), lung disease (4), and thyroiditis (1) after 250 treatments with supradiaphragmatic radiation, intestinal occlusion (2), nephritis (2), and osteitis (4) after 130 treatments with subdiaphragmatic radiation, and cutaneous sclerosis (13) and growth disorders (2) after 380 treatments with supra- and subdiaphragmatic radiation. Complications arose due to radiation overdose resulting from misunderstanding of timing factors in radiation administration, which modify the biological value of the dose, choice of wrong radiation technic, offsetting of radiation volume, and addition of successive treatments. General complications resulting from irradiation of sensitive tissues and the integral radiation dose include cancer and hematologic and immunologic disorders. The risk of a second primary cancer following radiotherapy for HD is increased by a factor of 18-25. Second primary cancers include squamous cell carcinomas, adenocarcinoma, sarcomas, and acute non-lymphoid leukemias. The increase in the risk of cancer following radiotherapy may result from DNA damage, liberation of a cancerogenic agents, or depression of immunity. Other risks associated with irradiation of the thyroid and gonads are described. (26 Refs) (In FRE)

28. FUNCTIONAL HYPOSPLENA AFTER SPLENIC IRRADIATION FOR HODGKIN'S DISEASE.

Coleman CN, McDougall IR, Dailey MO, Ager P, Bush S, Kaplan HS
Div. Radiation Therapy, Stanford Univ. Medical Center, Stanford, CA, 94305
Ann Intern Med; 96(1):44-47 1982

We previously reported a patient who developed fulminant pneumococcal sepsis 12 yr after successful treatment for Hodgkin's disease, which included splenic irradiation. We have since evaluated splenic size and function in 25 patients who had received splenic irradiation 5 to 16 years previously either for Hodgkin's disease (n = 19) or non-Hodgkin's lymphoma (n = 6). Mean max splenic diameter as measured on a 99mTc-sulfur colloid liver-spleen scan was 6.2 cm in the irradiated group and 9.7 cm in a control group (p less than 0.001). The mean percentage of RBC containing pits when observed with interference phase microscopy was 13.0% in the irradiated group, which was significantly different (p less than 0.001) from the levels found in each of the control groups: normal subjects, 0.9%; unstaged and untreated lymphoma patients, 0.6%; and patients after splenectomy, 33.7%. Patients who have had splenic irradiation should be considered at risk of developing overwhelming pneumococcal sepsis. (Author abstract) (24 Refs)

MUSCULOSKELETAL NEOPLASMS

29. CHORDOMA.

Reddy EK, Mansfield CM, Hartman GV
Coll. Health Sciences, Dept. Radiation Therapy, Univ. Kansas, 39th and Rainbow Blvd., Kansas City, KS, 66103
Int J Radiat Oncol Biol Phys; 7(12):1709-1711 1981

Clinical presentation and management of 10 patients (3 males and 7 females, 14-73 yr old, median 40.5 yr old) with chordoma are reported. Five patients had cranial tumors (in the clivus or parasellar area), one had a lumbar tumor, and four had sacral or sacrococcygeal tumors. Three patients had biopsy as the only surgical procedure; six patients underwent subtotal resection of the tumor mass. Eight patients received radiation therapy (RT: 4,200-8,000 rads in 4-8 wk). Av follow-up was 7 yr, with a minimum of 3 yr. Four patients were alive and disease-free at 3-15 yr; three of these had been treated by surgery and postoperative RT and one had received RT only. Six patients died of disease at 2-13 yr; four of these received RT (2 for tumor recurrence). Death resulted from local disease in five cases and from lung and liver metastases in one case. Treatment by surgery combined with aggressive RT (6,500-7,000 rads in 6-7 wk) is recommended. (16 Refs)

30. LIPOSARCOMA IN ADULTS. PROGNOSTIC FACTORS IN A SERIES OF 84 CASES.

Le Chevalier T, Rouesse J, Contesso G, Pejovic MH, Genin J, Sarrazin D
Institut Gustave Roussy, rue Camille Desmoulins, F 94800 Villejuif, France
Nouv Presse Med; 10(44):3625-3628 1981

A retrospective study of 84 patients with liposarcoma treated at the Gustave Roussy Institute between 1956 and 1978 has elicited a number of factors which influence the prognosis, namely: (1) the site of the initial tumor: patients with liposarcoma of the head, trunk and extremities have a better survival rate than those with retroperitoneal tumors or tumors of the pelvic and pectoral girdles; (2) the histological type: differentiated forms have a brighter prognosis than undifferentiated forms; (3) the size of the tumor: tumors of less than 10 cm in diameter have a more favorable prognosis than larger tumors; and (4) the patient's age, which in fact correlates with the histological type. Local recurrences are common but do not seem to worsen the prognosis. The only curative treatment is surgery, but radiotherapy reduces the risk of local recurrences and chemotherapy may be considered in cases with poor prognosis. (Author abstract) (20 Refs) (In FRE)

31. RADIOTHERAPY OF METASTATIC MELANOMAS.

von Lieven H, Lissner J
Radiologische Klinik der Universitat, Ziemenstr. 1, D-8000 Munchen 2, W. Germany
MMW; 123(50):1941-1944 1981

Applications of radiotherapy (RT) in the treatment of metastatic melanoma (MM) are described based on a retrospective study of 67 patients. MM was histologically confirmed in all patients; no patients had undergone prior surgery or RT. Lymph node metastases were irradiated with Co60 gamma rays. Primary tumors were irradiated with fast electrons. A total dose of 23.5-86.0 Gray was delivered in fractions of 2.5-4.3 Gray. Freedom from recurrence was achieved at a rate dependent on total dose and duration of treatment. Results indicate that the radiosensitivity of MM is less than that of other skin tumors but comparable to that of tumors of other organs. For a total dose of 55.0-70.0 Gray, a weekly dose of 10-12 Gray is recommended. Fourteen patients with Stage I disease received prophylactic RT of regional lymph nodes; and only 2 patients developed regional metastases. No recurrences were found after doses over 1600 rad equivalent therapy. RT produced results at least comparable to those from lymphadenectomy in cases of occult metastases. For cases with manifest lymph node metastases a combination of RT and lymphadenectomy is recommended. Palliative RT of distant metastases achieved relief of symptoms in most cases with a dose of 50 Gray in 5 wk. Side effects of RT included sc fibrosis and radiogenic ulceration. The risk of ulceration was particularly high in the lower extremities of patients with circulatory disorders. Overall results indicate the value of RT in curative or palliative therapy of MM. (21 Refs) (In GER)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

32. THE ROLE OF RADIATION THERAPY IN CARCINOMA OF THE LUNG.

Eisert DR, Hazra TA

Div. Radiation Oncology, Medical Coll. Virginia, Virginia Commonwealth Univ., Richmond, VA, 23298

JAMA; 247(3):338-340 1982

Radiotherapy (RT) in treatment of carcinoma of the lung (CL) is reviewed. RT is recommended for patients with CL limited to the thorax who are not candidates for surgery and who do not have small-cell CL. Complete or partial reduction in tumor mass can be achieved in 60-75% of such cases. Respons e is dependent on total radiation dose. Local control can be achieved in 36, 55, and 62% of cases with 4,000, 5,000, or 6,000 rad, respectively. While continuous-dose RT is more time-consuming than split-dose RT, it produces longer survival with lower risk of recurrence. Preoperative RT can convert some inoperable tumors to the operable state, but survival time is not improved. Postoperative RT improves survival if hilar and/or mediastinal lymph nodes are involved, or if surgical margins are positive for tumor. Postoperative RT does not improve survival of patients with negative lymph nodes. Adjuvant RT has not improved survival with chemotherapy for small-cell CL, but does reduce morbidity. Whole brain irradiation is effective in preventing brain metastases in patients receiving chemotherapy. Palliative RT provides symptomatic relief in a majority of patients with metastatic disease. (13 Refs)

33. RECONSTRUCTIVE OPERATIONS IN SURGICAL AND COMBINED TREATMENT OF LUNG CANCER.

Kharchenko VP, Fomin NS, Galil-Ogly GA, Chikvadze VD, D'iachkova LV, Loginova NA, Vershinin AI, Pokas LV

Surgical Clinic, Res. Roentgenoradiological Inst., Moscow, USSR

Khirurgiia (Mosk); (11):65-69 1981

Of 1,523 lung cancer patients subjected to lung resection, 360 (342 men, 18 women; 50-70 yr old) underwent reconstructive surgery. Histologically, 316 patients had squamous cell carcinoma, 22 had adenocarcinoma, and 22 had poorly differentiated carcinoma; majority of the patients (287) had central lung cancer. Twenty-three patients were in Stage I, 185 were in Stage II, and 152 were in Stage III. Of 360 patients, 71 underwent lobectomy with wedge resection of the major bronchus, 197 underwent lobectomy with circular resection of the major bronchus, 33 underwent lobectomy with circular resection of the major bronchus and resection of the bifurcation of the trachea, and 59 underwent pneumonectomy with resection of the bifurcation of the trachea. Of 360 patients, 265 received surgery in combination with pre- or postoperative radiotherapy (total dose 4,000-4,500 rads) or chemotherapy with cyclophosphamide (total dose 4 g). Postoperative complications were observed in 133 patients (29 died during the postoperative period). The 5-and 10-yr survival rates after surgery alone were 49.7% and 32.4%, respectively, compared with 60.3% and 44.8%, respectively, after surgery in combination with postoperative radiotherapy. Preoperative radiotherapy and chemotherapy did not improve the long-term results of the treatment. (10 Refs) (In RUS)

34. CEREBRAL IRRADIATION AS ADJUVANT THERAPY IN THE TREATMENT OF SMALL-CELL CARCINOMA OF THE LUNG.

N'Guyen TD, Pons A, Armand JP, Combes PF

Service de Radiotherapie, Institut Jean-Godinot, B.O. P.171, F51056 Reims Cedex, France

Rev Fr Mal Respir; 9(5):403-408 1981

The effectiveness of adjuvant cerebral irradiation was studied in 33 patients with small-cell lung cancer. All 33 patients were subjected to sequential polychemotherapy with cyclophosphamide (500 mg/square meter/day iv, days 1 and 8), vincristine (1 mg/m2/day iv, days 1 and 8), procarbazine (100 mg/m2 po, days 1-15) and lomustine (30 mg/m2 po, day 1, every other cycle) in monthly cycles and to mediastinal irradiation (total dose 3,000 rads in 10 fractions in 2 wk) during cycle 4 of the chemotherapy. In addition, 14 nonrandomized patients (Group I) were subjected to adjuvant cerebral irradiation (total dose 3,000 rads in 300-rad fractions in 2 wk) beginning on day 1 of the first polychemotherapy course. The remaining 19 patients who did not receive cerebral irradiations served as controls. All 3 patients were followed up for at least 12 mo. The incidence of (solitary or multiple) cerebral metastases was 0/14 in Group I and 8/19 in the controls. The mean survival times were 11.7 mo in Group I and 12.3 mo in the controls; the difference is not significant statistically. Eighteen patients in the control group died: the cause of death was cerebral metastasis in 7 cases, hepatic metastasis in 4, bone metastasis in 1, and local recurrence in 6. Thirteen patients in Group I died: the cause of death was hepatic metastasis in 4 cases, bone metastasis in 2, local recurrence in 5, and other causes in 3. One patient in each group has been in complete remission on chemotherapy for 10 mo (Group I) and 17 mo (control), respectively. The findings indicated that adjuvant cerebral irradiation is highly effective in preventing cerebral metastases without prolonging the survival because of extracerebral metastases. (Author abstract) (5 Refs) (In FRE)

35. EFFECT OF RADIOTHERAPY ON THE IMMUNOCOMPETENCE IN PATIENTS WITH BRONCHOGENIC CARCINOMA AND LARYNGEAL CANCER.

Oshitani T

Dept. Radiology, Kobe Univ. Sch. Medicine, Kobe, Japan

Nippon Igaku Hoshasen Gakkai Zasshi; 41(9):873-886 1981

We evaluated the immunocompetence of 80 patients with bronchogenic carcinoma and 17 patients with laryngeal cancer undergoing radiotherapy, using collectively many types of immunological parameters. In patients with bronchogenic carcinoma, no significant difference was seen with PHA and PPD skin tests, but the reactivity of PHA skin tests gradually decreased in the course of treatment. It was assumed that radiotherapy might not interfere with the recognition of antigen. Lymphocyte blastoid transformations with PHA, ConA and PWM were all inhibited significantly. Since these three mitogens can stimulate the different groups of lymphocyte, the inhibition to the proliferative function of lymphocyte due to radiotherapy would seem to cover a wide area, including T and B lymphocyte. Concerning the comparative radiosensitivity of T and B lymphocyte, no significant result was obtained. However, in the dose of 20Gy the percentage of T lymphocyte decreased, while the percentage of B lymphocyte increased. The percentage of early rosettes, one subset of T cell, decreased more sensitively than that of T cell, but there was no significant difference. The percentage of IgGFcR(+)T cell, considered a part of cytotoxic T cell or suppressor T cell, decreased significantly in the dose of 20 Gy, but returned to a high value in the dose of 40Gy. As the helper T cell can be considered radioresistant, it has been suggested that radiotherapy might give the host an immunological enhancement against tumor if a certain suitable method is used. Immunocompetence of cases in Stage III, which was significantly high before treatment, decreased to the same level as those in Stage IV according to the treatment. In patients with laryngeal cancer, lymphocyte counts and reactivity of PHA skin tests were not influenced by radiotherapy, and then reactivity of PPD skin tests and lymphocyte blastoid transformations with PHA and ConA tended to increase instead. Those results seemed to come mainly from the removal of inhibition to the immune system due to tumor, so we hope the estimate of immunocompetence can bring us influential information for judgement of the time of recurrence. (Author abstract) (64 Refs) (In JPN)

36. INTRAPLEURAL INSTILLATION OF RADIOACTIVE CHROMIC PHOSPHATE IN MALIGNANT PLEURAL EFFUSION.

Nori D, Moorthy CR, Hilaris BS, Batata MA, Chu F, Martini N
Brachytherapy Service, Memorial Sloa-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021
Indian J Cancer; 18(4):288-291 1981

The possible beneficial effects of intrapleural instillation of 32Phosphorous colloidal suspension in 85 patients with pleural effusion were investigated. Malignant pleural effusion is generally the result of either pleural implantation by small multiple metastases or lymphatic obstruction secondary to mediastinal or lymphangiectasis metastases. Advantages of 32P colloidal suspensions over similar suspensions of radioactive gold include higher beta energy, resulting in a greater tissue penetration, longer half-life, and the absence of gamma radiation. Twenty-seven of the 85 patients treated by 32P colloidal suspensions were complete responders and 24 were partial responders, for a total response rate of 60%. Median duration of response was 3 mo. Best response was achieved in patients with breast primary (67%) while lung had the lowest response rate (42%). Thoracentesis and 32P instillation were tolerated well. Patients who had a good distribution of colloid had a higher response rate (67%-80%) as compared to the few patients who had poor distribution (33% responders). Response was not related to extent of disease, or previous chemotherapy. Patients with serous effusion had a better response rate than patients with serosanguinous or sanguinous effusion. (4 Refs)

INSTRUMENTATION AND TECHNOLOGY

37. MEASUREMENTS OF THE DOSE DISTRIBUTION IN MANTLE FIELDS.

Jones D, Hilko R
Northwest Center Radiological Physics, Univ. Washington RC-08, Seattle, WA, 98195
Int J Radiat Oncol Biol Phys; 7(12):1733-1735 1981

A reference case consisting of a polystyrene phantom was constructed for calculation of radiation doses in irregular fields. Measurements of dose distributions are given for 13 machines. Variations in results are discussed. The importance of off-axis calculations in mantle irradiation is demonstrated. (2 Refs)

38. IMPROVED CALCULATIONS OF ENERGY DEPOSITION FROM FAST NEUTRONS.

Brenner DJ, Prael RE, Dicello JF, Zaider M
Los Alamos Natl. Lab., Los Alamos, NM
Proceedings of the Symposium on Neutron Dosimetry, held in Munich-Neuherberg, West Germany, June 1, 1981. Available from National Technical Information Service, Springfield, VA, as DE81025385:, 11 pp., 1981.

Increased interest in fast neutrons for radiotherapy has led to a need for accurate measurements and calculations in the energy region up to 100 MeV. Experimental neutron cross sections on elements of biological interest in the region above 15 MeV are sparse. Moreover, until recently, no secondary particle production spectra had been measured in this energy range. New data from the University of California at Davis has allowed cross-sectional calculations to be more firmly based. This in turn results in improved calculations of dose and energy deposition in small sites from high-energy neutrons. Secondary particle production spectra due to neutrons incident on carbon and oxygen are calculated using an intranuclear cascade code which takes into account specific nuclear properties of carbon and oxygen (in particular, alpha-particle clustering). It also allows excited nuclei to deexcite by Fermi breakup rather than the more frequently used statistical evaporation mechanism, which is not applicable to low-mass nuclei. The code yields double-differential secondary particle spectra in energy and angle which show good agreement with the experimental data from the University of California at Davis at 27, 40, and 61 MeV. (Author abstract)

39. CLINICAL HYPERTHERMIA: RESULTS OF A PHASE I TRIAL EMPLOYING HYPERTHERMIA ALONE OR IN COMBINATION WITH EXTERNAL BEAM OR INTERSTITIAL RADIOTHERAPY.

Manning MR, Cetas TC, Miller RC, Oleson JR, Connor WG, Gerner EW
Radiation Oncology Div., Univ. Arizona Health Sciences Center, Tucson, AZ, 85724
Cancer; 49(2):205-216 1982

Forty-three patients with advanced, locally accessible neoplasms were treated in a Phase I clinical trial employing hyperthermia alone or hyperthermia combined with either high-dose-rate external beam or low-dose-rate interstitial radiotherapy (interstitial thermoradiotherapy). All patients had failed previous conventional therapeutic attempts, including various combinations of surgery, chemotherapy and radiation therapy. A number of tumors with different histologies were treated, including squamous cell carcinoma, adenocarcinoma, melanoma, malignant fibrous histiocytoma, and sarcoma. The response evaluation criteria used included no response (NR- less than 50% decrease in tumor vol), partial response (PR-50% less than or equal to tumor vol reduction less than 100%) and complete response (CR-complete tumor disappearance). For all tumor types, hyperthermia therapy alone resulted in a total response rate of 45% (27% PR, 18% CR). Hyperthermia combined with high-dose-rate external beam radiotherapy yielded a total response rate of 80% (53% PR, 27% CR). Seventeen patients treated with interstitial thermoradiotherapy displayed a 100% total response rate (29% PR, 71% CR). By tumor histologies for all treatment groups, total response rates have ranged from 50 to 79% for all types except melanoma, which has shown a 100% (8/8) response rate to date. Response durations have varied from 1 to 24 mo. Twelve of the 43 patients remain alive; 3 have no evidence of disease (NED) while 9 have either stable local disease or are NED in the treated vol but have metastatic disease. Complications have been minimal. The results of this Phase I trial demonstrate that hyperthermia alone or combined with radiation can be safely applied in the treatment of malignant disease. Most importantly, the data suggest that hyperthermia, especially when combined with interstitial thermoradiotherapy, can yield remarkable results in the eradication of local cancers. (35 Refs)

PRE-CLINICAL STUDIES

40. EFFECT OF COMBINED MISONIDAZOLE AND ACCELERATED NEON IONS ON A HUMAN MELANOMA TRANSPLANTED INTO NUDE MICE.

Guichard M, Tenforde T, Curtis S, Malaise EP
Institut de Radiobiologie Clinique, Institut Gustave-Roussy, 16 bis, Avenue Paul-Vaillant Couturier, 94800 villejuif, France
Radiology; 142(1):219-223 1982

The response to accelerated neon ions of human Nall melanomas growing in nude mice was measured by an in vitro colony-forming assay following in situ tumor irradiation in the midposition of a 10-cm extended-peak ionization region. Values of the relative biological effectiveness (RBE) for peak neon ions compared with 60Co gamma radiation were 3.2 and 3.4, respectively, at the 1% and 10% survival levels. Following irradiation with peak neon ions, the repair of potentially lethal damage (PLD) was comparable to that observed after gamma irradiation. When misonidazole (1 mg/g intraperitoneal dose) was administered in combination with extended-peak neon ions, the drug enhancement ratio (ER) at the 1% survival level was 1.5 if the tumors were removed and plated in vitro immediately following irradiation, and 1.9 if tumor excision and plating were delayed for greater than or equal to 6 hr. Administration of misonidazole completely inhibited PLD repair following either gamma irradiation or extended peak neon-ion irradiation. (Author abstract) (18 Refs)

41. FRACTION SIZE AND THE REPAIR OF POTENTIALLY LETHAL RADIATION DAMAGE IN A HUMAN MELANOMA CELL LINE. POSSIBLE IMPLICATIONS FOR RADIOTHERAPY.

Weichselbaum RR, Malcolm AW, Little JB
Joint Center for Radiation Therapy, Peter Bent Brigham Hosp., 721 Huntington Ave., Boston, MA, 02115
Radiology; 142(1):225-227 1982

Studies performed on a human melanoma line in exponential growth showed radiation survival parameters similar to those of other tumors (n = 1.2, D0 = 151). In plateau-phase cultures, however, this tumor cell line was efficient in the repair of potentially lethal radiation damage, especially when large dose fractions were employed (there was a 48-fold recovery after 1,200 rad [12 Gy]). Thus, extrapolation from survival data generated only on exponentially growing cells may be misleading when determining the ultimate surviving fraction in some tumors. Large-fraction radiotherapy may not be effective in tumors that contain cells analogous to plateau-phase cells. (Author abstract) (15 Refs)

☆ U. S. GOVERNMENT PRINTING OFFICE : 1982—361-847/119

42. RADIOSENSITIZING EFFECT OF HYPERTHERMIA ON MOUSE SQUAMOUS CELL CARCINOMA.

Yoshino T

Dept. Obstetrics and Gynecology, Faculty Medicine, Kyushu Univ., Kyushu, Japan

Fukuoka Igaku Zasshi; 72(10):521-531 1981

Therapeutic effects of hyperthermia were investigated in tumor-bearing female DDD strain mice (6-8 wk old) prior to and after irradiation. Mice were administered 20-methylcholanthrene by the string method to induce squamous cell carcinoma of the uterine cervix (MCUCa1); MCUCa1 cells were inoculated into thighs of mice of the same species and then transplanted. The transplanted tumors were irradiated with single 2,000 rad doses. Only the legs with the tumors were given 43 C hyperthermia treatment for 30 min using a circulater type precision thermostatic water bath. The mice were divided into eight groups, based on the time of hyperthermia treatment (6, 4, 2, or 1 hr before or 1, 2, 4, or 6 hr after irradiation). Following irradiation, tumors were measured 3x/wk; the degree of reaction was scored according to Denekamp's system (7 stages, scored from 0.5 to 3.5). Based on calculations of therapeutic gain, hyperthermia administered immediately before or after irradiation had no effect on therapy (therapeutic gain 0.80-0.88), but hyperthermia administered 4-6 hr before or after irradiation was effective (therapeutic gain 1.00-1.12). (43 Refs)

43. RESPONSE OF HUMAN MALIGNANT MELANOMA XENOGRAFTS TO HYPERTHERMIA: EFFECT OF VASCULAR OCCLUSION.

Rofstad EK, Brustad T

Norsk Hydro's Inst. Cancer Res., Norwegian Radium Hosp., Montebello, Oslo 3, Nor way

Int J Radiat Oncol Biol Phys; 7(12):1685-1687 1981

Single-cell survival of human malignant melanoma (MM) xenografts after hyperthermic treatment under normal and hypoxic conditions was assayed. E.E. MM (EE) cells were obtained from an axillary lymph node metastasis in a 62-yr-old man. V.N. melanoma (VN) cells were obtained from an sc metastasis in a 29-yr-old woman. NMRI/nu/nu/Han mice (males and females) received flank transplants of tumor from passages 30-35 of EE or passages 20-25 of VN melanoma. Treatments were performed when tumors reached a diameter of 8-12 mm. Tumors were exposed to hyperthermia (42.5 C) by immersion in a water bath for varying times. Blood supply to some tumors was occluded by application of a tourniquet 15 min before immersion. Hyperthermia reduced the colony-forming capacity of MM cells on soft agar. VN cells were more sensitive than EE cells. Heat sensitivity of both cell types was greatly increased by occlusion of the tumor blood supply before treatment. Temperatures of clamped and nonclamped tumors were the same, indicating that reduced cell survival in clamped tumors was not due to higher temperatures. Slope (D0) values were calculated for exponential plots of cell survival versus time. The ratios of D0 for unclamped tumors to D0 for clamped tumors were 6.6 +-3.6 for EE cells and 2.3 +-0.5 for VN cells. (19 Refs)

AUTHOR INDEX WITH CITATION NUMBERS

Abbatucci JS	27
Ager P	28
Albot G	9
Alipchenko LA	8
Anderson P	17
Appelbaum FR	25
Appelqvist P	7
Armand JP	34
Augsburger JJ	18
Aupecle P	14
Awschalom M	20
Batata MA	36
Baulieux J	6
Begg C	24
Bennett JM	24
Binder W	13
Borgelt B	5
Boulez J	6
Boyd CN	25
Bozdech MJ	24
Brady LW	18
Brenner DJ	38
Bruckner CD	25
Brustad T	43
Bullimore JA	12
Burnon D	6
Bush S	28
Cai W	19
Cetas TC	39
Chang CH	3
Chaplain G	14
Cheever MA	25
Cheng VS	23
Chikvadze VD	33
Chu F	36
Cohen L	20
Coleman CN	28
Combes PF	34
Connor WG	39
Contesso G	30
Curtis S	40
D'iachkova LV	33
Dailey MO	28
Davis LW	21
Day JL	18
Dicello JF	38
Dische S	17
Dobelbower RR	10
Donaldson M	26
Donne R	6
Eisert DR	32
Fazekas JT	22
Fefer A	25
Fomin NS	33
Freedman RS	16
Galil-Ogly GA	33
Gelber R	5
Genin J	30
Gerner EW	39
Goodman RL	22
Greenberg PD	25
Griffin T	5
Gu X	19
Guichard M	40
Hall RR	11
Hamberger AD	16
Hammond GD	26
Hammond JA	16
Harisiadis L	3
Hartman GV	29
Hawliczek R	13
Hazra TA	32
Heath AB	11
Hendrickson F	20
Hendrickson F	5
Herson J	16
Hilaris BS	36
Hilko R	37
Horiot JC	14
Hu Y	19
Ibrahim E	14
Jones D	37
Kaplan HG	25
Kaplan HS	28
Karcher KH	13
Kaufman S	23
Kaul R	20
Kharchenko VP	33
Kir'ianov IIu	8
Kogelnik HD	13
Larson M	5
Le Chevalier T	30
Li Q	19
Lissner J	31
Little JB	41
Littman P	26
Loginova NA	33
MacLean CJ	21
Maillet P	6
Malaise EP	40
Malcolm AW	41
Manning MR	39
Mansell J	20
Mansfield CM	29
Martini N	36
McDougall IR	28
McLean CJ	22
Mcnulty P	23
Miller RC	39
Mohiuddin M	10
Montague ED	1
Moorthy CR	36
N'Guyen TD	34
Nabid A	14
Nesbit ME	26
Nori D	36
Oleson JR	39
Ortega JA	26
Oshitani T	35
Parturier-Albot	9
Peix JL	6
Pejovic MH	30
Pokas LV	33
Pons A	34
Prael RE	38
Qin D	19
Raker J	23
Ramberg R	25
Reddy EK	29
Roberts JB	12
Robison LL	26
Robison R	1
Rofstad EK	43
Rosato FE	10
Rosenberg I	20
Roth R	5
Rothman K	23
Rouesse J	30
Rowland CG	12
Rubin P	24
Rutledge FN	16
Salazar OM	4
Sanders JE	25
Sarrazin D	30
Sather H	26
Sentenac I	14
Shields JA	18
Silber R	24
Silvo J	7
Smith PJ	12
Storb R	25
Suit HD	23
Sung DI	3
Sutiagin AG	8
Szepesi T	13
Ten Haken R	20
Tenforde T	40
Thomas ED	25
Vershinin AI	33
Vishnevskaia EE	15
Von Lieven H	31
Walker A	23
Wallace S	16
Wang CC	23
Weichselbaum RR	41
Weiss SM	10
Wharton JT	16
Whittington R	10
Wu X	19
Xu G	19
Yan J	19
Yoshino T	42
Zaider M	38
Zeuke W	2

Keep Up with the Cancer Literature

Each Month You Can Receive Abstracts Covering Your Specialty Area

- This convenient service — called Auto SDI* — is as near as your nearest biomedical library. Discuss your research interests with the librarian who will design an appropriate search strategy.
- Abstracts of the latest published literature are searched automatically each month and those related to your interests are delivered to you on a regular basis.
- The abstracts you receive are selected from more than 4,000 monthly entries made into CANCERLIT — the extensive cancer literature data base of the National Cancer Institute.

Talk With Your Librarian About the Auto SDI Service TODAY.

---

*Auto SDI stands for Automatic Selective Dissemination of Information. It is a service provided to you, at minimal cost, by the International Cancer Research Data Bank (ICRDB) — a part of the National Cancer Institute.

INTERNATIONAL CANCER RESEARCH
DATA BANK

Compilation of Experimental Cancer Therapy Protocol Summaries

COMPLIMENTARY COPIES
NOW AVAILABLE

April 1982
Sixth Edition

CONTENT

This document contains summaries of over 1200 open experimental clinical cancer therapy protocols from countries around the world.

Open protocols are arranged in sections according to the specific type of cancer.

Protocols closed in 1981 are listed by title, number, and investigator in a separate section.

INDEXES

Tumor index
Agent/Modality index
Protocol identification number index

Mail to:
Compilation Request
ICRDB Program
National Cancer Institute
Westwood Building Room 10A18
Bethesda, Maryland 20205

Request for 1982 COMPILATION.
(Print Clearly for use as mailing label)

Name: ______________________________

Address: ______________________________

____

City/State/Zip: ______________________________

Country: ______________________________

CANCER LINE

More Than Just A Fancy Name

Mention CANCERLINE to your librarian and the world's foremost collection of cancer information is at your disposal. With the help of this computerized data system, you can obtain information on the following:

Cancer Literature

The literature date base, **CANCERLIT**, allows you to survey more than 3,000 biomedical journals for information on your topic of interest. Your search will also alert you to meeting proceedings, monographs, and books published in that area. Informative abstracts averaging 200 words are provided with each citation;

Current Cancer Research

The data base **CANCERPROJ** allows you to retrieve descriptions of current work in any cancer research area. The descriptions, which state research objective, methodology, and experimental results, are supplied for projects underway in 77 countries around the world.

Cancer Therapy Protocols

The **CLINPROT** section of CANCERLINE is designed primarily for clinicians. It provides detailed summaries of currently active experimental protocols for any cancer site, agent, or type.

Ask your biomedical librarian about CANCERLINE.
CANCERLINE is sponsored by the International Cancer Research Data Bank—a program of the National Cancer Institute.

CANCERLINE

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U S DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT 15/82/07

NCI/ICRDB/CT15 82/07

PB82-939007

ICRDB CANCERGRAM

CLINICAL TREATMENT OF CANCER

Radiation Therapy

SERIES CT15 No. 82/07

JULY, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy *If this Cancergram is useful and valuable, please send your comments to the CIDAC address below, since future editions depend on user satisfaction and user needs:*

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr., M.D.

DID YOU KNOW?? EACH CANCERLIT SEARCH THAT PROVIDES YOU WITH USEFUL DATA CAN BE STORED IN THE COMPUTER FOR AUTOMATIC SEARCHING OF NEW DATA EACH MONTH. ASK YOUR LIBRARIAN ABOUT AUTOMATIC SELECTIVE DISSEMINATION OF INFORMATION (AUTO-SDT).

In this issue:

- **BREAST NEOPLASMS** 1-3
- **CENTRAL NERVOUS SYSTEM NEOPLASMS** 4-6
- **DIGESTIVE NEOPLASMS** 7-9
- **GENITOURINARY NEOPLASMS** 10-16
- **GYNECOLOGIC NEOPLASMS** 17-24
- **HEAD AND NECK NEOPLASMS** 25-37
- **HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS** 38-40
- **MUSCULOSKELETAL NEOPLASMS** 41-42
- **RESPIRATORY AND CARDIOVASCULAR NEOPLASMS** 43-45
- **INSTRUMENTATION AND TECHNOLOGY** 46-52
- **PRE-CLINICAL STUDIES** 53-54

NEWARK PUBLIC LIBRARY

AUG 18 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Public Health Service • National Institutes of Health • National Cancer Institute

HE 20. 3173/2:

BREAST NEOPLASMS

1. THE IMPORTANCE OF POSTOPERATIVE RADIOTHERAPY FOR THE REDUCTION OF THE LOCAL RECURRENCE RATE OF MASTOCARCINOMAS.

Berg-Schlosser V, Zimmermann U, Prignitz R, Kleinsorge F, Hess F
Klinik und Poliklinik fur Strahlentherapie und Rontgendiagnostik, Robert-Koch-Str. 8a, D-3550 Marburg/Lahn, W. Germany
Strahlentherapie; 157(11):705-712 1981

In order to find out the frequency of local recurrences, the authors evaluated 4 33 case reports of patients with mastocarcinomas who had been submitted to postoperative radiotherapy on a gammatron between January 1973 and December 1977 at the Radiologic Hospital of the University of Marburg. A local recurrence within the region of thoracic wall, axilla or supraclavicular cavity was found in 24 cases (5.5%). For half of these cases, a formation of remote metastases was clinically demonstrable either at the same time as the local recurrence was found or a few mo before or afterwards. In 63% of all cases, the local recurrence appeared within the first 2 yr after operation and irradiation. The study contains a comparative table of the local recurrences found in 20 examinations. These patients were either not irradiated or submitted to postoperative radiotherapy under high voltage conditions. The rate of local recurrences of the only operated groups was 22.2% on an av, that of the groups of patients irradiated after surgery was 6.4%. (Author abstract) (39 Refs) (In GER)

2. PRIMARY RADIATION THERAPY OF BREAST CANCER.

Sauer R
Strahlentherapeutische Universitatsklinik, Krankenhausstrasse 12, D-8520 Erlangen, W. Germany
Strahlentherapie; 157(2):71-80 1981

Many experiences with breast-saving primary radiation therapy following tumorectomy justify the utilization of this method as an alternative to mastectomy. Complications are insignificant, cosmetic results excellent in general, on the condition, however, of rigorous indication, of careful and atraumatic surgical technique and exactly planned and accurately delivered megavoltage therapy. Local and regional tumor control amounts to 90% in Stage-I cases, to 85% in Stage II, and to about 65% in Stage III. Five-yr survival is obtained in 85 to 95% of Stage I cases, 65 to 75% of Stage II and in about 25% of Stage III cases. Ten-yr survival rate lies between 45 and 60%. No sign of secondary malignomas possibly induced by curative radiation therapy has been found till now. (Author abstract) (60 Refs) (In GER)

3. STAGE III AND LOCALIZED STAGE IV BREAST CANCER: IRRADIATION ALONE VS IRRADIATION PLUS SURGERY.

Bedwinek J, Rao DV, Perez C, Lee J, Fineberg B
Div. Radiation Oncology, Mallinckrodt Inst. Radiology, Washington Univ., 4511 Forest Park, St. Louis, MO
Int J Radiat Oncol Biol Phys; 8(1):31-36 1982

One hundred and eighty-three patients with Stage III and localized Stage IV breast cancer were treated with radiotherapy alone (RT) or RT combined with surgery (RTS). Of the 147 patients with non-inflammatory carcinoma (NIC), 93 received RTS, and 54 RT. Of 36 patients with inflammatory carcinoma (IC), 29 were treated with RT, and the remaining 7 with RTS. In NIC patients, a significantly higher rate of local failure occurred in RT patients (61%) as compared with RTS (13%) patients. The regional failure r ate was 37% in RT patients and 12% in RTS patients. The incidence of distant metastasis was the same for both groups, 65% vs 68%. The local failure rates were 45% for RT patients and 12% for RTS patients in the T3 NIC category, and 65% for RT patients and 13% for RTS patients in the T4 category. In both categories, the incidences of distant metastasis were essentially the same. Local failure rates were determined in relation to tumor size and treatment: 5-8 cm: 43% for RT, 14% for RTS; and 8 cm or greater: 76% for RT, 5% for RTS. There was no difference in the distant metastasis rates between the two treatment groups within the 5-8 cm and 8 cm or greater categories. The rate of local failure for the 29 patients with IC treated with RT was 52% compared to 14% for those treated with RTS. The difference in the regional failure rate between RT (38%) and RTS (29%) was determined. The rate of distant metastasis was essentially the same for the two treatment groups. With the exception of the six patients with tumors 0-5 cm, the incidence of local failure did not decrease with increasing total tumor dose. The most frequent complication, either moderate or severe, in the RT group was breast fibrosis (19%). while in the RTS group, arm edema (13%) was the most common complication. (20 Refs)

CENTRAL NERVOUS SYSTEM NEOPLASMS

4. THERAPEUTIC RESULTS ACHIEVED DURING THE PAST FIFTEEN YEARS IN CASES OF MEDULLOBLASTOMA.

Pichler E, Kogelnik HD, Reinartz G, Karcher KH, Zaunbauer F, Jurgenssen OA, Koos W, Kundi M

Universitats-Kinderklinik, Wahringer Gurtel 74-76, A-1097 Wien, Austria

Strahlentherapie; 157(8):508-515 1981

From October 1964 to December 1979 86 patients with medulloblastoma were craniotomized. Since 1967 38 patients had postoperative radiotherapy, and since 1975 14 patients had additional primary chemotherapy. The quality of radiotherapy was analyzed in a retrograde fashion according to radiation quality, extension of radiation field and radiation dosage. Thus, 11 patients were irradiated in an inadequate, 14 in a suboptimal and 13 in an adequate way. Thirty-seven of 40 patients (2 were lost from observation) who had surgery only died, 1 is alive and free of tumor 14 yr after diagnosis. All 11 patients whose radiotherapy was considered as inadequate (including 1 patient who had cytostatic therapy when in her 3rd relapse) and 12 of 14 patients with suboptimal radiotherapy (including 2 with primary chemotherapy) died. Two patients with suboptimal radiotherapy have survived their diagnosis free of tumor for 9 1/2 and 8 3/4 yr respectively. Two of the 13 patients who had adequate radiotherapy and primary chemotherapy died, 11 (10 of them also treated with primary chemotherapy) have survived for 12 to 66 mo. Two of these 11 patients experienced a relapse recently. These and three additional patients are still on therapy. Adequate radiotherapy of the craniospinal axis plus additional primary chemotherapy seem to bring better chances of survival in this small series thus treated. (Author abstract) (63 Refs) (In GER)

5. CLINICAL EXPERIENCES WITH THE RADIOSENSITIZER MISONIDAZOL.

Bamberg M, Tamulevicius P, Streffer C, Scherer E
Strahlenklinik, Universitatsklinikums Essen, Hufelandstr. 55, D-4300 Essen 1, W. Germany
Strahlentherapie; 157(8):524-536 1981

The principle of action of sensitizers with electron affinity is explained and the development of these radiosensitizing substances up to the clinical use of Misonidazol (MIS; Ro-07-0582) is shown. With special regard to the pharmacokinetic action of this substance, the therapeutic effects of MIS were examined in 10 patients with brain tumors of high malignancy (400 mg/m2) and 4 patients with esophageal carcinomas (1 g/m2), all these patients having reached the clinical Phase III. Four other patients with recurrent brain tumors received a dose of 1 g/m2 of MIS before each irradiation. Apart from slight neurotoxic and gastrointestinal side effects, the applied doses of MIS were generally well tolerated. Only in one case a generalized maculopapular exanthema developed which regressed completely within a few days. No correlation could be found between the subjective side effects and the plasma values determined by means of high pressure liquid chromatography (HPLC). After 1 to 4 hr following oral application, the maximum plasma concentrations were measured, the half-life (T1/2) varying in all patients between 5 and 10 hr. It was not possible to demonstrate an influence of dexamethasone on the plasma concentration of half-life of MIS in the brain tumor patients. The cerebrospinal fluid concentrations of MIS which may be used as an index for the concentrations in brain tumors, are closely corresponding plasma values. There was no correlation between MIS concentrations in plasma and saliva, so that the determination of MIS in the saliva cannot be recommended as a routine method for control examinations. Apart from the unchanged MIS, Demethylmisonidazol (DEMIS; Ro-05-9963), the product of demethylation, could be identified as the principal metabolite in urine. Only up to 40% of the MIS doses administered was found in form of MIS or DEMIS. The first preliminary results of the study on brain tumors (108 patients) do not seem to show any therapeutic advantage for glioma patients as against those patients who received only placebos. (Author abstract) (56 Refs) (In GER)

6. A COMPARATIVE STUDY OF EPENDYMOMAS BY SITE OF ORIGIN.

Marks JE, Adler SJ
Div. Radiation Oncology, Mallinckrodt Inst. Radiology, Washington Univ. Sch. Medicine, St. Louis, MO, 63110
Int J Radiat Oncol Biol Phys; 8(1):37-43 1982

The clinical behavior of irradiated ependymomas (EP) arising from different site s (20 supratentorial, 26 infratentorial, 7 spinal cord, and 8 equina cauda) was examined in 61 patients (34 males, 27 females; 25 adults, 36 children) in relation to EP control, clinical and pathologic incidence of spinal seeding, site of failure, dose response, survival, and neurologic function after treatment with surgery and radiation. Persistent or locally recurrent EP at the primary site of EP origin was diagnosed by reoperation in 10 patients, by autopsy in 7, and by clinical deterioration and/or radiographic study in 17. Ventricular spread outside of the irradiated vol was found by autopsy in two patients and by radiography in two. Spinal cord metastases were diagnosed by laminectomy in one patient, cerebral spinal fluid cytology in one, and autopsy in three. The interval from end of radiation until discovery of persistent or recurrent EP was 50 mo for infratentorial, 24 mo for supratentorial, and 17 for spinal cord or cauda equina EP. For 61 patients followed for 3 or more yr, control of primary EP was best for cauda equina, intermediate for spinal cord and infratentorial, and least for supratentorial EP. Spinal metastases occurred in patients with supratentorial (1) or infratentorial (4) EP. The relationship between nominal standard dose, primary tumor control, and failure by site of EP origin is described. Five- and 10-yr survival rates were highest for cauda equina, intermediate for infratentorial and spinal cord, and least for supratentorial EP. Radiation myelopathy and/or cauda equina syndrome developed 3.5-17 yr after treatment with intrathecal gold in 3/8 patients and 1.5 yr after external spinal irradiation in 1/25. Major surgical complications occurred in two patients. Neurologic deficits, retreatment results, second primary tumors, and causes of death are described. (24 Refs)

DIGESTIVE NEOPLASMS

7. SURGICAL TREATMENT OF RECTAL CARCINOMA WITH OR WITHOUT PREOPERATIVE IRRADIATION: PRELIMINARY RESULTS OF A RANDOM TRIAL.

Boulis Wassif S, Langenhorst BL
Rotterdamsch Radio-Therapeutisch Instituut, Rotterdam, The Netherlands
Ned Tijdschr Geneeskd; 125(29):1148-1151 1981

Ninety patients with marginally resectable rectal carcinomas were subjected to surgery (46 patients, Group I) or to preoperative irradiation (av total dose 3,450 rads in 15 fractions, administered in 18 days, 44 patients, Group II). Radical abdominoperineal resection was performed in 30 patients in Group I and 25 in Group II, radical anterior resection in 6 and 15, incomplete resection in 3 patients in Group I, palliative resection because of hepatic metastasis in 1 patient in each group, colostomy because of inoperability or hepatic metastasis in 3 patients in Group I and in 2 in Group II. The postoperative mortality was 7/46 in Group I and 2/44 in Group II. Staging according to Duke's classification was per formed after surgery in 45 patients in Group I and in 42 in Group II. Stage 0 was established in 0 and 1 patient; Stage A in 3 and 6, B in 23 and 26, and C in 19 and 9, respectively. Lymph node metastases were found in 42% of the patients in Group I and in 21% in Group II, which indicates the possibility to sterilize lymph node metastases by preopertive irradiation. Seventy-two patients survived after radical surgery: 8 of them (5 in Group I and 3 in II) developed recurrences during the follow-up period. The prognosis was more favorable in Group II than in I, but the survival rates during the first 5 yr showed no significant differences between the two groups. The survival rates were significantly higher in Stages A + B than in C. (7 Refs) (In DUT)

8. COMBINED PRE AND POSTOPERATIVE RADIATION FOR CARCINOMA OF THE RECTUM.

Mohiuddin M, Kramer S, Marks G, Dobelbower RR
Dept. Radiation Therapy and Nuclear Medicine, Thomas Jefferson Univ. Hosp., Philadelphia, PA, 19107
Int J Radiat Oncol Biol Phys; 8(1):133-136 1982

Seventy-eight patients with invasive carcinoma of the rectum localized to the pelvis received preoperative radiation (500 rad) on the day preceding or the day of surgery. Fifty-six patients underwent an abdominal perineal resection, 10 a combined abdominal transsacral resection, and 4 a low anterior resection; eight patients were treated palliatively. Twenty-nine Stage A or B1 patients received no postoperative treatment. Of forty-one patients with Stage B2, C1, or C2 disease, 25 received the full course of postoperative radiotherapy. Sixteen patients did not receive postoperative radiation due to surgeon non-compliance with the study (9 patients), patient refusal (5), or postoperative complications (2). Follow-up ranged from 6-48 mo with a median of 18 mo. No complications from low dose preoperative radiation were observed. Mild diarrhea, which usually resolved spontaneously within 1 mo treatment, was the most common problem during the course of postoperative radiation. Five patients had a delay in healing of the surgical wound. One patient developed small bowel obstruction requiring surgery. Two patients died of postoperative complications within 1 mo of surgery. Sixty-nine patients are alive. Of 25 patients receiving both pre- and postoperative radiation, 4 patients developed distant metastatic disease. No patient in this group has failed with recurrent tumor in the pelvis. Of the 16 patients who should have but did not receive postoperative radiation, 6 patients developed recurrent cancer, 4 in the pelvis and 2 with distant metastases. The role of adjuvant radiotherapy is discussed. (14 Refs)

9. RADIOTHERAPY OF CARCINOMAS OF THE BILE DUCTS AND PANCREAS.

Leer JW, Van de Velde CJ, Vierhout PA
Afdelingen Klinische Oncologie, Academisch Ziekenhuis, Leiden, The Netherlands
Ned Tijdschr Geneeskd; 125(29):1160-1165 1981

Experience with the radiotherapy of patients with carcinomas of the bile ducts or pancreas is reported, and the related literature is reviewed. Six patients with bile duct carcinomas were subjected to choledochotomy, and two of them also to cholecystectomy. Surgery was followed by irradiation of the primary tumor site (total dose 6,000 rads in 6 wk). The regional lymph node were not irradiated. The radiotherapy was well tolerated. Four of the six patients were symptom-free after treatment for approx 6 mo. All patients developed regional recurrences which were the direct or indirect cause of death beyond the first 1-6 mo. Eleven patients with pancreatic carcinoma were irradiated. Irradiation was the only treatment in four patients with nonresectable tumors. The irradiation was combined with chemotherapy (lomustine, vincristine and 5-fluorouracil). Ten of the 11 patients showed subjective improvement. Two patients were still alive 12 and 18 mo after the beginning of the radiotherapy, respectively. The findings and data in the literature indicate that carcinomas of the bile ducts and pancreas should not be considered to be a priori radioresistant tumors. (40 Refs) (In DUT)

GENITOURINARY NEOPLASMS

10. 4,000 RAD PREOPERATIVE IRRADIATION FOLLOWED BY PROMPT RADICAL CYSTECTOMY FOR INVASIVE BLADDER CARCINOMA: A PROSPECTIVE STUDY OF PATIENT TOLERANCE AND PATHOLOGIC DOWNSTAGING.

Shipley WU, Cummings KB, Coombs LJ, Hawkins IR, Einstein AB, Penick G
Dept. Radiation Medicine, Massachusetts General Hosp., Boston, MA, 02114
J Urol; 127(1):48-51 1982

The initial National Bladder Cancer Collaborative Group A experience with 4,000 rad adjuvant preoperative radiation therapy followed promptly (within 1 to 28 days) by radical cystectomy and urinary diversion in patients with muscle-invading bladder cancer was monitored prospectively with respect to tolerance of radiation therapy, early postoperative complications and pathologic downstaging. All patients completed the scheduled megavoltage irradiation with, at most, only mild intestinal, urinary or hematologic toxicity. In addition, 86 per cent of the patients completed planned radical cystectomy, with a median interval between radiation therapy and surgery of 13.6 days. No patient died postoperatively. Of the patients 69 percent recovered with no postoperative complications, while 18 percent had 1,9 percent had 2 and 4 percent had 3 complications. Pathologic downstaging occurred in 39 percent of the patients: the disease was downstaged to stage pT0 in 24 percent and to stage pT1 in 15 percent. Of the patients with an interval of 13 days or less between radiation therapy and surgery the disease was downstaged to stage pT0 in 20 percent and 63 percent had no postoperative complications. In patients with an interval of more than 13 days, the disease was downstaged in 30 percent and 76 percent had no postoperative complications. The results support our rationale for selecting this regimen of adjuvant full dose preoperative radiation therapy, which can shorten the interval between diagnosis and cystectomy while allowing for the possibility of pathologic downstaging and a radiation dose that is likely to sterilize unresected pelvic micrometastases. (Author abstract) (11 Refs)

11. PREOPERATIVE IRRADIATION AND CYSTECTOMY FOR BLADDER CANCER.

Smith JA, Batata M, Grabstald H, Sogani PC, Herr H, Whitmore WF (c/o Batata) Urologic Service, Memorial Sloan-Kettering Cancer Center, New York, NY, 10021
Cancer; 49(5):869-873 1982

Between 1971 and 1974, 101 patients at Memorial Sloan-Kettering Cancer Center underwent planned integrated treatment for bladder cancer with 2,000 rads by megavoltage delivered to the whole pelvis over 5 consecutive days followed by radical cystectomy within a wk. The overall 5-yr survival rate was 39%; the hospital mortality rate was 2%. In the pelvis alone tumor recurred in 9% of the patients. These results support other studies demonstrating the efficacy of this and other regimens of preoperative irradiation and cystectomy. (Author abstract) (9 Refs)

12. STAGE T1NXM0 BLADDER CANCER TREATED BY RADIUM IMPLANTATION OR TRANSURETHRAL RESECTION.

van der Werf-Messing B, Hop WC
Rotterdamsch Radio-Therapeutisch Instituut, Rotterdam, The Netherlands
Ned Tijdschr Geneeskd; 125(21):825-829 1981

The therapeutic effectiveness of exclusive transurethral resection (TUR) and suprapubic radium implantation (RI) following diagnostic TUR was compared in patients with Stage T1NxM0 carcinoma of the urinary bladder. One hundred and forty-eight patients (126 men and 22 women) were subjected to TUR only (TUR Group). Papillary carcinoma was diagnosed in 104/148 patients, solid or mixed carcinoma in 28, and the histological type was not established in 16 cases. Other 197 patients (164 men and 33 women) were treated by radium implantation after diagnostic TUR (RI Group). Papillary carcinoma was diagnosed in 116/197 patients, solid or mixed carcinoma in 75, and the histological type was not ascertained in 6 cases. The actuarial 5-and 10-yr survival rates were significantly higher in the RI Group (107/195 and 44/195 evaluable patients, respectively) than in the TUR group (55/144 and 8/144 evaluable patients). Local recurrences were seen in 107/143 evaluable patients in the TUR Group and in 35/196 evaluable patients in the RI Group; the recurrences were multiple in 26/107 and 3/35 patients, respectively. Stages higher than T1 were established after recurrence in 32/107 and 6/35 patients, respectively. The patients with recurrences were treated by TUR in 56/107 cases in the TUR Group and in 11/35 cases in the RI Group, while external irradiation was perform ed in 14/107 and 8/35 patients, respectively. Cystectomy was necessary in 8/107 and 5/35 patients, respectively. The findings indicate the definite advantage of radium implantation over TUR in the treatment of patients with solitary bladder carcinoma. (10 Refs) (In DUT)

13. RADIOTHERAPY OF PROSTATE CARCINOMAS.

Dietz R, Dhom G, Kopper B, Sommer F
Radiologische Klinik der Universitat Homburg, D-6650 Homberg, W. Germany
Strahlentherapie; 157(7):442-445 1981

A report is given on 79 patients with primarily untreated 'virginal' prostate carcinomas of the stages T0 to T3, who were submitted to a primary local monotherapy in form of moving field irradiations with megavoltage units between 1971 and 1975. The axial dose was 7,600 rad for the mostly applied method with a telecobalt unit. The prostate had to be surrounded by the isodose of 90%, so it was exposed to at least 6,800 rad. The local effect was examined by control biopsies which were executed at intervals of a 1/2 year to 1 year. More than half of all patients showed a significant regression. The side effects of the high voltage therapy were temporary and could in all cases be controlled by symptomatic treatment. The uncorrected 5-year survival rate was 78.5% for the stages T0 to T3, 90.9% for the stages T1 and T2 and 66.7% for the stage T3. Besides the stage, the prognosis depended also on the degree of differentiation of the tumor. The 5-year survival rate of GIII carcinomas was significantly worse than that of the degrees of differentiation GI and GII. The value of exploratory pelvic lymphadenectomy for the staging before radiotherapy and the individual adaption to the therapy of the degree of differentiation of the tumor are discussed. (Author abstract) (23 Refs) (In GER)

14. RADIATION THERAPY FOR CARCINOMA OF THE PROSTATE.

Kawai T, Takeda T, Kihara K, Fukushima S
Dept. Urology, Cancer Inst. Hosp., 1-37-1, Kamiikebukuro, Toshima-ku, Tokyo, Japan
Prostate; (Suppl1):35-40 1981

Linear accelerator x-rays of 4.3-12 million electron volts were applied through a 240 degree arc moving external beam over different periods of time to 67 patients with prostatic cancer in the following stages: A, 2; B, 13; C, 32; and D, 20. Total tumor doses measured at the center of the prostate were 6,000-7,000 rad within 6-7 wk. Most of the patients also received antiandrogenic treatment; many received chemotherapy; only six underwent radiotherapy (RT) alone. Five-yr survival rates by stage were as follows: A, 100%; B, 91.7%, C, 58.9%; and D, 25.3%. Six patients have survived more than 10 yr, and have discontinued treatment (A, 1; C, 4; D, 1). Radiation effects on 58 patients included reduction in tumor size and prostate softening in 72.4% of cases, no change in 25.9%, and aggravation in 1.7% (1 case). Antiandrogenic therapy is indicated for well-differentiated carcinoma that is responsive to hormone therapy, but RT is indicated for radiosensitive undifferentiated carcinoma. Evaluation of RT based on palpation and biopsy shows that those patients with prostatic atrophy and no cancer cells have an excellent prognosis; where there is no change in size of the lesion after RT, the prognosis is not good, and possible disease reactivation and metastasis should be considered. (5 Refs)

15. EXTERNAL BEAM RADIOTHERAPY FOR PALLIATION OF PAIN FROM METASTATIC CARCINOMA OF THE PROSTATE.

Benson RC, Hasan SM, Jones AG, Schlise S
Dept. Urology, Mayo Clinic, Rochester, MN, 55905
J Urol; 127(1):69-71 1982

Radiotherapy often is used for palliation of bone pain from metastatic cancer of the prostate, but an objective evaluation of its efficacy in a large series of patients is unavailable. We report the results of external beam irradiation in 62 patients who had bone pain secondary to stage D carcinoma of the prostate. The variables used to judge pain before and after radiotherapy included subjective evaluation of pain, status of activity and quantitation of analgesic use. Complete relief of pain was achieved in 26 patients (42%), partial relief in 22 (35%), and no relief in 14 (23%). On the basis of our experience, external beam irradiation is useful palliative therapy for pain from metastatic cancer of the prostate. (Author abstract) (7 Refs)

16. RADIOTHERAPY IN CASE OF INTRACEREBRAL FORMATION OF METASTASES OF NON-SEMINOMATOUS TESTICLE TUMORS.

Budach V, Schulz U Higi M, Niederle N
Strahlenklinik des Universitatsklinikums Essen, Hufelandstr. 55, D-4300 Essen 1, W. Germany
Strahlentherapie; 157(7):450-454 1981

The subject of this study was non-seminomatous testicle tumors with cerebral formation of metastases. Despite the relatively low radiosensitivity of the primary tumors and their regional metastases 18 of 20 patients were free of symptoms, and a complete regression of the intracerebral tumors was shown by computed tomography and/or scintigraphy in 10 of 20 cases. This regression was obtained within 2 or 3 wk by an irradiation of the skull with a focal dose of 30 to 40 Gy. Due to the small number of patients (20), it was not possible to demonstrate a statistically different receptiveness of the cerebral metastases according to their histological subentity. Because of the subjective stress, the duration of radiotherapy should be as short as possible (eg 30 Gy in 10 fractions over a period of 2 wk). In our opinion, irradiation is clearly indicated in case of testicle teratomas with cerebral formation of metastases. Practically the only contra-indications are a strong intracranial hypertension as well as hyperkinesia. The entire prognosis of the patient, however, is not determined by the cerebral formation of metastases but by the pulmonary m etastatic extension, so that radiotherapy is an important palliative factor with regard to the survival time of these patients. (Author abstract) (18 Refs) (In GER)

GYNECOLOGIC NEOPLASMS

17. HIGH VERSUS LOW DOSE-RATE INTRACAVITARY RADIOTHERAPY IN THE TREATMENT OF CARCINOMA OF THE UTERUS. A COMPARATIVE STUDY OF AFTERLOADING CO60 (CATHETRON) AND CONVENTIONAL (RADIUM) TREATMENT.

Taina E
Dept. Obstetrics and Gynecology, Univ. Turku, Turku, Finland
Acta Obstet Gynecol Scand [Suppl]; (103):7-27 1981

Afterloading Co60 and conventional radium therapy of carcinoma of the uterus are reviewed, and a comparative study of the two methods is presented. Intracavitary radium therapy of cervical carcinoma is performed by two principle methods. The Paris method uses small amounts of radium over a long period of treatment for a total dose to the paracervical triangle of 72 Gray. The Stockholm method uses larger amounts of radium in a short, intense treatment, for a dose to the cervix, lower uterine segment, vaginal vault, and paracervical triangle of approx 70 Gray. Cancer of the endometrium is treated by the single linear radium source method, Heyman's packing technique, or intracavitary vaginal radium therapy. Afterloading Co60 (Cathetron) therapy employs various catheters into which Co60 is inserted. The appropriate catheters are inserted into the vagina and uterus and are fixed in place using vaginal prostheses. Afterloading therapy and conventional radium therapy were compared in a study of 101 patients with cervical carcinoma and 91 patients with endometrial carcinoma. Conventional therapy had the advantages of long half life, longest clinical experience, and availability of radium sources. Radiation exposure posed a hazard to patients and staff. Cathetron therapy had the advantages of convenience, radiation protection to the staff and other patients, minimization of hospitalization, good fixation of treatment catheters, and the ability to treat many patients per day. (111 Refs)

18. UROLOGICAL COMPLICATIONS OF RADIOTHERAPY OF UTERINE CARCINOMA.

Bronz L, Kunz J, Schreiner WE
Departement fur Frauenheilkunde, Universitatsspital, CH-8091 Zurich, Switzerland
Gynaekol Rundsch; 21(Suppl3):47-48 1981

Urological complications resulting from radiotherapy (RT) were studied in 839 patients with uterine carcinoma. RT produced transitory complications (TC) in 4% of patients with carcinoma of the collum treated with x-ray/radium RT (XR) and 10% of those treated with high-voltage/cesium RT (HVC); persistent complications (PC) occurred in 5% with XR and 15% with HVC. Among patients with carcinoma of the uterine body, TC occurred in 3% with XR and 7% with HVC; PC occurred in 3% with XR and 8% with HVC. (no Refs) (In GER)

19. INTESTINAL COMPLICATIONS OF RADIOTHERAPY OF UTERINE CARCINOMA.

Bronz L, Kunz J, Schreiner WE
Departement fur Frauenheilkunde, Universitatsspital, CH-8091 Zurich, Switzerland
Gynaekol Rundsch; 21(Suppl3):49-50 1981

Intestinal complications (IC) resulting from radiotherapy (RT) were studied in 839 patients treated for uterine carcinoma (UC). X-ray/radium RT (XR) produced transitory IC (TIC) in 19% of patients with UC of the collum (UCC) and 10% of those with UC of the body (UCB). XR produced persistent IC (PIC) in 12% of patients with UCC and 6% of those with UCB. High-voltage/cesium RT (HVC) produced TIC in 48% of patients with UCC and 36% of those with UCB. HVC produced PIC in 36% of patients with UCC and 15% of those with UCB. (no Refs) (In GER)

20. INTRACAVITARY IRRADIATION OF ENDOMETRIAL CARCINOMAS OF THE UTERUS IN STAGE I USING A 'BULB TECHNIQUE': PHYSICAL BASIS.

Bjornsson M, Sorbe B
Dept. Radiophysics, Regionsjukhuset, S-701 85 Orebro, Sweden
Br J Radiol; 55(649):56-59 1982

In an attempt to replace the well-known low dose-rate 226Ra in the Heyman packing method with a high-dose-rate afterloading system (Cathetron with 60Co sources) for the treatment of stage I carcinoma of the uterine body, a new concept called the 'bulb technique' has been developed. Different 60Co source trains have been combined to create isodose curve distributions adjusted to the individual size and form of the uterine body. Computer simulation and measurements were used to establish the physical basis of the technique. (Author abstract) (8 Refs)

21. A COMPARISON OF CLINICAL RESULTS FOLLOWING HIGH DOSE-RATE INTRACAVITARY AFTERLOADING IRRADIATION WITH CO60 (CATHETRON) AND CONVENTIONAL RADIUM THERAPY FOR ST. I-II CERVICAL CARCINOMA.

Taina E, Gronroos M
Dept. Obstetrics and Gynecology, Univ. Turku, 20520 Turku 52, Finland
Acta Obstet Gynecol Scand [Suppl]; (103):31-38 1981

From 1969 to 1976, 101 patients with St Ia-IIb cervical carcinoma were treated with the Cathetron (C) and 84 patients with radium (R). Surgery was carried out on 56.4% of the patients in Group C and 60.7% in Group R 2 wk after the intracavitary radiotherapy and 51.5% of the patients in Group C and 45.2% in Group R received external irradiation with or without an operation. There was no statistical difference in the survival between the two treatment groups, the 5-yr crude survival rate being 81.6% for Group C and 78.6% for Group R and the 3-yr crude survival rates 85.1% and 83.3% respectively. Local recurrence of tumor was more frequent in Group R (10.7%) than in Group C (3.0%) ($p = 0.03$). There were more early complications during or after the Cathetron (10.9%) than radium treatment (3.6%), without any statistical significance, however. No differences were found in operative difficulties or early postoperative morbidity between the two groups during or after radical operations after intracavitary radiotherapy. (Author abstract) (51 Refs)

22. COMPLICATIONS FOLLOWING HIGH AND LOW DOSE-RATE INTRACAVITARY RADIOTHERAPY FOR ST. I-II CERVICAL CARCINOMA: A COMPARISON OF REMOTELY AFTERLOADED CO60 (CATHETRON) AND CONVENTIONAL RADIUM THERAPY.

Taina E

Dept. Obstetrics and Gynecology, Univ. Turku, 20520 Turku 52, Finland

Acta Obstet Gynecol Scand [Suppl]; (103):39-49 1981

A study was made to compare the incidence, quality and etiology of complications after low and high dose-rate intracavitary radiotherapy for St Ia-IIb cervical carcinoma in 185 patients, of whom 84 were treated with radium (R) and 101 with afterloaded Co60 (Cathetron, C), from 1969 to 1976. The frequency of surgery and external irradiation was similar in both groups. There were more ($p = 0.01$) complications in Group C (27.7%) than in Group R (13.1%). However, when the single fractions in the Cathetron treatment were lowered from 10 Gy to 7.5 Gy each in 1972, the incidence of complications decreased from 42.4% to 20.6% ($p = 0.02$) and the latter incidence was not statistically different from Group R. Intestinal complications were more frequent than urological ones in both groups. low wt was significantly (p less than 0.025) correlated with the development of complications and previous laparotomy ($p = 0.0001$) with the development of fistulae in Group C. (Author abstract) (57 Refs)

23. PARA-AORTIC LYMPH NODE IRRADIATION IN CARCINOMA OF THE CERVIX AFTER EXPLORATORY LAPAROTOMY AND BIOPSY-PROVEN POSITIVE AORTIC NODES.

Tewfik HH, Buchsbaum HJ, Latourette HB, Lifshitz SG, Tewfik FA

Dept. Radiology, Div. Radiation Therapy, Univ. Iowa Hospitals and Clinics, Iowa City, IA, 52242

Int J Radiat Oncol Biol Phys; 8(1):13-18 1982

Pelvic and para-aortic lymph node (PALN) radiotherapy (RT) was administered following staging laparotomy in 23 women (34-75 yr old) with positive PALN and cervix neoplasms (18 squamous cell carcinomas, 5 adenocarcinomas). The delay between surgery and start of RT averaged 10 days. Cobalt-60 was used in all patients for external RT of fields including the pelvic, iliac, and para-aortic nodes. A daily tumor dose of 180 rad was delivered to the midplane of the abdomen and pelvis, in 5 daily fractions/wk. The majority of the patients received a total midplane dose ranging from 4,000 to 6,000 rad to the pelvis and from 5,000 to 5,500 rad to the PALN area by external RT. Intracavitary radium was used in the form of two inserts in 15/23 patients and one insert in 5/23. Five patients were alive with no evidence of disease 115, 110, 90, 73, and 45 mo after completion of RT. Three of the five surviving patients developed bowel complications requiring surgery. Fifteen patients died of cancer at an av of 21 mo. The av survival was 40 mo. Of 18 deceased patients, 5 had developed late bowel radiation damage, 3 requiring surgical intervention. Sites of failure were as follows: 5 pelvis, 2 lung, 2 generalized, 2 scalene lymph nodes, 1 lung and bone, 1 bone, 1 anasarca, and 1 unknown. During RT, the main side effects were nausea, vomiting, and diarrhea sufficiently severe in some patients to lead to difficulties in electrolyte balance and nutritional problems. (29 Refs)

24. GASTROINTESTINAL COMPLICATIONS AFTER RADIOTHERAPY FOR CARCINOMA OF THE UTERINE CERVIX.

Shibata HR, Freeman CR, Roman TN

Dept. Surgery, Royal Victoria Hosp., Rm. S10.22, 687 Pine Ave. W., Montreal, PQ H3A 1A1, Canada

Can J Surg; 25(1):64-66 1982

Radiotherapy for invasive carcinoma of the uterine cervix caused gastrointestinal complications in 52 of 441 patients. External beam and intracavitary radiation together caused greater bowel damage than either method alone. Twenty-eight of the 52 patients required surgical intervention. Ileal stenosis in nine patients required primary resection with anastomosis in seven while the stenosis was bypassed in the other two. Acute perforation with peritonitis would require a diverting ileostomy and creation of a mucous fistula. A defunctioning colostomy was indicated for relief of pain, bleeding and stenosis of the rectum in 11 of 15 patients; 2 patients were treated by primary resection, 1 underwent abdominoperineal resection and another a pelvic exenteration. Of four patients with ileal and rectal involvement, one underwent right hemicolectomy and transverse colostomy, two had ileal resection and sigmoid colostomy and the other had hemicolectomy and rectal resection. All patients were well at follow-up from 3 to 120 mo after operation. A Hartmann's procedure is indicated when it appears that primary closure may not succeed. Individualized management is essential. (Author abstract) (13 Refs)

HEAD AND NECK NEOPLASMS

25. CHEMODECTOMAS ARISING IN TEMPORAL BONE STRUCTURES.

Dickens WJ, Million RR, Cassisi NJ, Singleton GT

Div. Radiation Therapy, J. Hillis Miller Health Center, Box J-385, Gainesville, FL, 32610

Laryngoscope; 92(2):188-191 1982

Eighteen patients with chemodectomas arising in temporal bone structures were evaluated and treated at the University of Florida. Seventeen patients have each been followed a minimum of 3 yr. Patients were retrospectively staged as having 'local' or 'advanced' disease, depending on the presence or absence of bone destruction and/or cranial nerve involvement. Fourteen of the patients received radiation therapy as all or part of their therapy; 6 patients were treated with radiation therapy alone, 3 patients were irradiated immediately postoperatively for residual disease, and 5 patients had radiation therapy for recurrence after operation. They were treated with cobalt-60 radiation with doses ranging from 37 60 to 5640 rad. All irradiated patients demonstrated evidence of tumor regression, and none have had tumor recurrence with followup of 3-12 yr. Of the eight patients with cranial nerve paralysis prior to therapy, five had return of function of one or more cranial nerves. One of six patients treated initially with radiation therapy had a complication, while six of eight patients irradiated postoperatively had complications. None of the complications were fatal. Three patients treated by operation for early disease limited to the hypotympanum had the disease controlled for 11-12 yr. Guidelines for the selection of initial therapy are discussed. (Author abstract) (8 Refs)

26. THE POTENTIAL FOR ADJUVANT RADIOTHERAPY IN CHOROIDAL MELANOMA.

Char DH, Phillips TL
Ocular Oncology Unit, Univ. California, Science 315, San Francisco, CA, 94143
Arch Ophthalmol; 100(2):247-248 1982

Controversy exists regarding the efficacy of enucleation in the management of choroidal melanoma. The effect of any form of ocular therapy on the prevalence of choroidal melanoma metastases is unknown. In a number of other systemic tumors, preoperative irradiation may lessen the occurrence of widespread disease. This type of therapeutic approach might be useful in the management of high-risk choroidal melanoma. In preliminary studies using 2,000 rad of preenucleation irradiation in patients with choroidal melanoma who have a poor prognosis, we have not observed notable morbidity. There are a number of limitations to the use of this adjunct therapy in choroidal melanoma management; however, a prospective national randomized trial of preenucleation irradiation in patients with high-risk choroidal melanoma might allow us to indirectly determine the effect of enucleation on the prevalence of choroidal melanoma metastases as well as delineate the potential role of this type of adjunct therapy in ocular melanoma. (Author abstract) (23 Refs)

27. POST-THERAPEUTIC RETINAL VASCULAR LESIONS.

Francois P, Fallas M-C, Castier P
Lille, France
Bull Soc Ophtalmol Fr; 81(8/9):575-577 1981

Complications of radiotherapeutic treatment of retinal tumors, malignant choroidal tumors, and retro-ocular tumors are reviewed and several cases are discussed. Patient age ranged from 7 mo in a child with bilateral retinoblastoma to 61 yr old in a man with a choroidal tumor. Irradiation of the eye and of retro-ocular tumors led to capillary and arteria sclerosis and retinal anoxia. Vascular sclerosis caused by radiotherapy led to the same complications that are observed in chronic occlusions. In certain cases, localized areas of edema with retinal edema surrounded by exudate were observed. In other cases, anoxia led to vascular proliferation with retinal hemorrhage which compromised the functional result that had been acquired. Complications of occular radiotherapy occur very gradually beginning 1 yr or more following therapy and can result from any type of radiotherapy. Careful follow-up of patients who have been irradiated is recommended. When complications have begun, little can be done to alter the course of their evolution. (no Refs) (In FRE)

28. RADIATION RETINOPATHY.

Brown GC, Shields JA, Sanborn G, Augsburger JJ, Schatz NJ, Savino PJ
Retina Vascular Unit, Wills Eye Hosp., Thomas Jefferson Univ., Philadelphia, PA
Trans Pa Acad Ophthalmol Otolaryngol; 34(2):144-151 1982

External beam radiotherapy (RT: 4,000-5,000 rad) was given to a 60-yr-old man with diabetes mellitus who had a choriodal tumor (a metastasis of an unknown primary) and a 55-yr-old man with an orbital lymphoma of the left eye. Both patients developed symptoms of retinopathy 19 mo after the end of RT. The second patient developed symptoms of bilateral retinopathy, which progressed to severe neovascular glaucoma in the left eye 30 mo after RT. This eye was enucleated and histological study disclosed retinal atrophy and no evidence of tumor. One man and two women (40-56 yr old) with unilateral choroidal melanomas were treated by ^{60}Co shield RT (10,000 rad to the apex of the tumor) and developed symptoms of retinopathy 13-18 mo after the end of RT. One patient developed symptoms of pseudodiabetic retinopathy after 23 mo; the reduced visual acuity was caused by the loss of foveal capillaries and cystoid macular edema. In another patient, the reduced visual acuity was caused by massive subretinal exudates from incompetent vessels of retinal and/or choroidal origin, surrounding the regressing tumor. The patient who developed retinopathy 13 mo after RT had a 19-yr history of occult diabetes. The loss of visual acuity was attributed to severe retinal capillary nonperfusion and neovascularization of the disk. The findings in this patient illustrated the combined adverse effects of diabetes and RT on the retina. (19 Refs)

29. CARCINOMA OF THE TONSILLAR REGION: A COMPARISON OF RADIATION THERAPY WITH COMBINED PREOPERATIVE RADIATION AND SURGERY.

Shrewsbury D, Adams GL, Duvall AJ, Maisel RH, Haselow RE
(c/o Adams) Dept. Otolaryngology, Univ. Minnesota, Box 396, Mayo Bldg., Minneapolis, MN, 55455
Otolaryngol Head Neck Surg; 89(6):979-985 1981

The 2-yr outcome of combined radiotherapy (RT: 5,075 rads to the primary site, 4,000-5,000 rads to the lower neck and supraclavicular nodes) and surgery (en bloc composite resection, including radical neck dissection) or of full-course RT only (as above, except 7,000 rads to the primary site) was studied in 96 patients with tonsillar carcinomas. Patients developing second primary tumors and patients undergoing other types of tumor resection were excluded from the study. The presence of palpable lymph node involvement (55/96 patients) adversely affected the outcome, regardless of the size of the primary tumor. After 2 yr, 26/47 patients with negative nodes and 23/55 patients with palpable neck disease were alive with no evidence of disease (NED). The 2-yr NED survival rates, tabulated according to tumor size (T stage), were 86% in Stage T1 (12/14 patients), 66% in Stage T2 (14/21), 42% in Stage T3 (20/48), and 8% in Stage T4 (1/13). RT and combined therapy were about equally effective in patients with Stage T1 or T2 primaries and negative lymph nodes; in all other groups, the NED survival rate was better with combined therapy. Combined therapy is advised for T3 primaries, regardless of the extent of nodal involvement, and for T4 primaries if it is feasible to obtain negative surgical margins. Salvage surgery (composite en bloc resection, as above) was considered for patients relapsing after full-course RT, but it was impossible in 32/40 patients because of distant metastases, fixed neck nodes, or massive recurrences. After salvage surgery, 5/8 patients remained NED. Treatment failure was almost always at the primary site and/or the neck. Distant metastases (lung or liver) seldom developed without a local-regional recurrence. (15 Refs)

30. INTRAVITAL DOSIMETRY OF POSTOPERATIVE RADIOTHERAPY IN PATIENTS WITH ORAL CARCINOMA.

Akuamoa-Boateng E, Will TH, Schroder C
Abteilung fur Mund-, Kiefer- und Gesichtschirurgie,, Knappschafts-Krankenhaus Universitatsklinik Bochum, In der Schornau 23, 4630 Bochum 7, W. Germany
Dtsch Zahnaerztl Z; 37(1):48-51 1982

Technique and clinical results of thermoluminescence dosimetry (TLD) in radiotherapy of oral carcinomas are presented.

TLD utilizes the activation of crystalline sensors by ionizing radiation. A series of lithium fluoride elements are inserted into synthetic tubes. Tubes are then positioned on the external skin surface; others are inserted according to individual case requirements into the oral cavity and/or spaces created by excision of tumor. Tubes in the oral cavity are positioned sublingually and on the root of the tongue. Measurements of radiation dosage to the tumor bed are obtained by inserting sensors into drainage tubes positioned during surgery. Advantages off TLD include direct measurement of energy doses, small size of the sensor elements, ease of calibration, and precision of the technique (+-2% error). TLD measures the energy delivered by ionizing radiation, rather than the dose of ionic particles. Evaluation of results of approx 700 individual clinical measurements with TLD indicated that radiation doses delivered to specific areas frequently are different from the planned dose as a result of inhomogeneities in tissues. TLD allows exact measurement of doses in living patients, permitting precise control of radiotherapy. (6 Refs) (In GER)

31. PREOPERATIVE SHORT-TIME IRRADIATION WITH TELECOBALT IN CASE OF SQUAMOUS CELL CARCINOMA OF THE FLOOR OF THE MOUTH.

Hering KG, Dieckmann J, Morgenroth K, Will CH
Chefarzt der Strahlenklinik, Kreiskrankenhauses Wetzlar, Forsthaustr. 1, D-6330 Wetzlar, W. Germany
Strahlentherapie; 157(11):699-704 1981

Between 1974 and 1979, 46 patients suffering from squamous cell carcinomas of the floor of the mouth in the Stages T1-3 N0-3 were submitted to preoperative short-term irradiations and postoperative saturating irradiations. After histological confirmation by instantaneous section examination, a focal dose of 18-20 Gy was administered within 3 days over opposed fields with wedge filter compensation into the middle of the floor of the mouth. Twenty to 21 hr later, radical operation with stage dependent neck dissection was effected. Two to 3 wk after the operation, the dose on the floor of the mouth was saturated up to 55-60 Gy. The homolateral lymph region received a max dose of 50 Gy over a ventral field. Eighty-one patients forming a control group - the randomization was made after admission to the hospital - were treated after radical operation with 55-60 Gy in the middle of the floor of the mouth and 50 Gy in the lymph outflow region. The postoperative healing proceeded without complications. The evaluation of survival rates according to Kaplan and Meier shows no difference between T1 and T3 tumors. In case of T2 tumors and independently of the N stage, the pre-irradiated patients show an improvement of the survival curve which is still continuing. On the whole, the group of pre-irradiated patients show a decrease of mortality of 8% and an increase of 15% of patients without tumors. (Author abstract) (23 Refs) (In GER)

32. ANALYSIS OF THE PARAMETERS RELATING TO FAILURES ABOVE THE CLAVICLES IN PATIENTS TREATED BY POSTOPERATIVE IRRADIATION FOR SQUAMOUS CELL CARCINOMAS OF THE ORAL CAVITY OR OROPHARYNX.

Feldman M, Fletcher GH
(c/o Fletcher) Dept. Radiotherapy, Univ. Texas M. D. Anderson Hosp. and Tumor Inst., Houston, TX, 77030
Int J Radiat Oncol Biol Phys; 8(1):27-30 1982

Patients with squamous cell carcinomas of the oral cavity (56 patients) or oropharynx (46) were treated postoperatively with 5,000-6,500-rad radiotherapy. Recurrences above the clavicles appeared within 2 yr in 35/38 patients, within 30 mo in 95%, and within 3 yr in 100%. Of the total of 102 patients, 81 were evaluable for control of disease above the clavicles. In patients with T3 or T4 lesions, the incidence of failures at the primary site alone or with neck disease was 22% and 32%, respectively, for the oral cavity and oropharynx. Of the 8 patients with positive surgical margins who experienced a failure, the tumor doses were 5,000 rad in 2/8, 6,000 rad in 5/8, and 6,500 in 1/8. Within this group of eight patients, T4 predominated with an oropharynx primary, primarily on the posterior pharyngeal wall. In nine other patients, despite generous portals, a failure occurred close to or outside of the periphery of the portals. Neck failure with primary controlled was usually the result of no elective irradiation or uncertain dose. Failure rates for different studies are compared. Where definite disease exists at the margin of resection, 6,500 rad or in specific situations 7,000 rad should be given through reduced fields. (6 Refs)

33. RADIOTHERAPY FOR TUMORS OF THE GLOMUS JUGULARE.

Bataini JP, Kasdorf P, Brugere J, Poncet P, Jaulerry C, Bruinin F
Service de Radiotherapie, Institut Curie, 26, rue d'Ulm, F 75231 Paris, France
Ann Otolaryngol Chir Cervicofac; 98(4/5):239-242 1981

Eight patients with benign glomus jugulare tumors (GJT) were administered radiotherapy alone. The diagnosis of GJT was established in all cases by clinical and radiographic data. All patients had extensive bony destruction of the base of the skull. All patients were treated with high energy radiation from 4,400-6,000 rads. The disappearance of functional symptoms was rapid and often occurred near the end of radiotherapy. Osteolysis of the base of the skull remained unchanged during follow-up except for the occasional appearance of a light marginal sclerosis. In one case, post-therapeutic x-rays revealed a perfect reconstruction of the base of the skull. Six patients were free of recurrent disease 16, 10, 9, 7, 6, and 2 yr following radiotherapy. Two other patients could not be evaluated but were alive 12 and 8 yr following therapy. There were no secondary complications such as myelitis or osteoradionecrosis. The importance of using sufficient voltage to affect a cure is stressed. Previous trials have shown that doses less than 4,000 rads have been ineffective in controlling GJT. (15 Refs) (In FRE)

34. RADIATION THERAPY FOR SUBCLINICAL CARCINOMA IN CERVICAL LYMPH NODES.

Mantravadi R, Katz A, Haas R, Liebner EJ, Sabato D, Skolnik E, Appelbaum EL
Dept. Radiology, Univ. Illinois Hosp., 1740 Taylor St., Chicago, IL, 60612
Arch Otolaryngol; 108(2):108-111 1982

Radiotherapy alone was used to treat 187 patients with a head and neck cancer and clinically uninvolved lymph nodes. Delayed lymph node metastases developed in 35 (19%) patients, and concomitant tumor at the primary site was present in 90% of them. In 2 (1%) of the 187 patients, delayed metastases developed in the irradiated nodes with the primary tumor controlled; both of these patients received a radiation dose of less than 5,000 rad. Metastases in supraclavicular and posterior cervical regions occurred in 4% of the patients; and these sites were not included in the original radiation fields. The following conclusions were reached: (1) a radiation dose of 5,000 rad or more can eradicate 99% of the subclinical carcinomas in lymph nodes; (2) whole-neck irradiation is not indicated in patients with N0 stage tumor; and (3) surgical resection of primary tumors alone, without added neck dissection, may be adequate if post-operative radiation therapy is planned. (Author abstract) (19 Refs)

35. FRAMEWORK INVASION BY LARYNGEAL CARCINOMA.

Pittam MR, Carter RL
(c/o Carter) Dept. Pathology, Royal Marsden Hosp. and Inst. Cancer Res., Sutton, Surrey SM2 5PX, England
Head Neck Surg; 4(3):200-208 1982

The accuracy of clinical and radiological findings was studied in 50 randomly selected patients (45 men and 5 women, 36-78 yr old) undergoing laryngectomy for squamous carcinoma (SC). SC was classified as Stage I or II in 22 cases and Stage III or IV in 26 cases. Primary treatment consisted of megavoltage radiation in 42 cases (38 curative and 4 preoperative). Preoperative chemotherapy was given in 24 cases. Total laryngectomy was performed on 46 patients and partial laryngectomy on 4 patients. Among 44 patients assessed before laryngectomy, 12 had referred ear pain; 11/12 patients with ear pain had invasion of the laryngeal framework or extralaryngeal soft tissues. Analysis of laryngeal tomograms correctly identified 10/14 transglottic tumors but incorrectly identified 7 other tumors as transglottic. Direct laryngoscopy failed to identify 3/8 transglottic tumors and underestimated the degree of infraglottic extension in 7/9 tumors. Transglottic tumors accounted for 21/27 over 2 cm in diameter with invasion of the laryngeal framework. In follow-up of 1 mo to 2.5 yr tumors recurred in 8/20 patients with invasion and 2/20 patients without invasion of the laryngeal framework. (22 Refs)

36. COMBINED LARYNGEAL CONSERVATIVE SURGERY AND IRRADIATION: CAN WE EXPAND THE INDICATIONS FOR CONSERVATION THERAPY?

Goepfert H, Lindberg RD, Jesse RH
Dept. Head and Neck Surgery, Univ. Texas System Cancer Center, M.D., Anderson Hosp. and Tumor Inst. 6723 Bertner, Houston, TX, 77030
Otolaryngol Head Neck Surg; 89(6):974-978 1981

Laryngeal cancers in 39 patients (24 men, 15 women, 34-77 yr old, median 60 yr old) were treated by a combination of conservation surgery and pre- or postoperative radiotherapy (RT: 5,000-5,500 rads to the primary tumor; 5,000 rads to the lower neck area when lymph node involvement was present). These patients were selected for combined treatment because surgery or RT alone was deemed inadequate. One patient died of unknown causes in the postoperative period; the others were followed up for at least 18 mo. Lymph node metastases were present in 8/16 patients with supraglottic cancers. One patient developed neck metastases outside the treatment fields after 13 mo. Two patients died of other causes. After a median of 50 mo, 13/16 had no evidence of disease (NED). Lymph node metastases were present in 1/14 patients with glottic cancer. One patient died of unknown causes 3 wk postoperatively; the others were NED after a minimum of 18 mo. Lymph node metastases were present in 11/19 patients with cancers of the hypopharyngeal wall or pyriform sinus. Eight patients relapsed (7/8 at the primary site or neck, 1/8 distantly); one patient was successfully treated for a recurrence after 33 mo and was NED after 49 mo. Five patients died of other causes; 2/5 deaths were from pulmonary complications caused by persistent aspiration due to pharyngolaryngeal incoordination. After a median of 36 mo, 6/19 patients were NED. It is concluded that this combined treatment can control the cancer and preserve good function in the majority of patients. Because of the high recurrence rate in patients with carcinomas of the pyriform sinus and hypopharyngeal wall, adjuvant chemotherapy may be useful. (12 Refs)

37. THE SIGNIFICANCE OF LARYNGEAL EDEMA FOLLOWING RADIOTHERAPY OF CARCINOMA OF THE VOCAL CORD.

Fu KK, Woodhouse RJ, Quivey JM, Phillips TL, Dedo HH
Dept. Radiation Oncology, Univ. California San Francisco, 330 Moffitt Hosp., San Francisco, CA, 94143
Cancer; 49(4):655-658 1982

Laryngeal edema persisting for more than 3 mo following radiotherapy developed in 38 of 247 (15.4%) patients irradiated for carcinoma of the vocal cord. In 17 (44.7%) of these patients, the laryngeal edema was associated with persistent or recurrent disease, although only 25.4% of the patients with uncontrolled disease had laryngeal edema. The incidence of laryngeal edema was 13.1% for T1 disease, 23.8% for T2, and 21.4% for T3 and T4 disease. It increased significantly with increase of min tumor dose greater than or equal to 7,000 rad or with NSD greater than 1,900 ret, being 46.2% with min tumor dose greater than or equal to 7,000 rad and 13.7% with min tumor dose less than 7,000 rad and 43% with NSD greater than 1,900 ret and 17% with NSD less than or equal to 1,900 ret. It also increased with increase of field size, being 13.4% with field sizes less than 6.0 x 6.0 cm2, and 24.4% with field sizes greater than or equal to 6.0 x 6.0 cm2. When laryngeal edema is progressive and unresponsive to conservative measures, multiple biopsies should be performed to establish the presence of persistent or recurrent disease before salvage surgery is attempted. However, if it is mild, stable, no visible recurrence develops, and especially if it is limited to the arytenoids, no biopsy should be attempted because of the risk of inducing laryngeal necrosis. (Author abstract) (11 Refs)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

38. HISTOPATHOLOGIC SUBCLASSIFICATION OF DIFFUSE HISTIOCYTIC LYMPHOMA AND RESPONSE TO THERAPY.

Stryker JA, Abt AB, Eyster ME, Lowman JG
Div. Radiation Oncology, M.S. Hershey Medical Center, Pennsylvania State Univ., Hershey, PA, 17033
Radiology; 142(2):501-506 1982

In 55 patients with diffuse histiocytic lymphoma (Stages I-IV), the disease was subclassified as large cleaved-cell (17 patients), large noncleaved-cell (12 patients), mixed follicular-center cell (14 patients), blastic (6 patients), and pleomorphic pyroninophilic (6 petients). Two-year survival rates for these subclasses were 47%, 42%, 64%, 17%, and 33%, respectively, suggesting that histopathologic subclass is an important prognostic factor in diffuse histiocytic lymphoma. The mean tumor dose that produced local control in 22 patients who were treated with radiation therapy alone was 4,834 rad (48.34 Gy), whereas the mean tumor dose for local control when chemotherapy was used in combination with radiation therapy (16 patients) was 3,679 rad (36.79 Gy). This suggests that when chemotherapy is used with radiation therapy, a lower tumor dose will be sufficient to achieve local control than when radiation therapy is used alone. In addition, 43% of the patients who presented with an intra-abdominal primary lymphoma experienced local failure following treatment. It is recommended that patients who present with an abdominal primary tumor be treated aggressively with combined modality therapy whenever feasible. (Author abstract) (18 Refs)

39. THYROID FUNCTION AFTER MANTLE FIELD RADIATION THERAPY.

Dahnert W, Kutzner J, Grimm W
Universitatsklinik Mainz, Langenbeckstr. 1, D-6500 Mainz, W. Germany
Strahlentherapie; 157(8):499-507 1981

Forty eight patients with malignant lymphoma received a 60Co-radiation of 30 to 50 Gy using the mantle field technique. Thyroid function tests were performed 34 to 92 mo after radiation therapy. One patient developed myxedema, 10 (20.8%) had subclinical hypothyroidism and 6 (12.5%) latent hypothyroidism. The incidence of hypothyroidism after treatment of malignant lymphomas is summarized in a review of the literature. Discrepancies on the incidence of hypothyroidism were found, and their possible cause is discussed. Periodic examinations of all patients with thyroid radiation exposure are recommended. The examination can be limited to measurement of TSH concentration and palpation of the thyroid for nodules. (Author abstract) (38 Refs) (In GER)

40. EFFECT OF CENTRAL NERVOUS SYSTEM RADIOTHERAPY IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA ON LYMPHOCYTE SUBPOPULATIONS AND INDICATORS OF LEUKOCYTE MIGRATION INHIBITION IN THE PERIPHERAL BLOOD.

Cesarz-Kruz E, Lukas A, Sroczynska M, Lukas W, Sonta-Jakimczyk D
Klinika Pediatrii, Sl. AM, ul. 3 Maja 13/15, 41-800 Zabrze, Poland
Pediatr Pol; 56(9):1003-1007 1981

The effects of polychemotherapy and prophylactic cranial irradiation (total dose 2,400 rads) on peripheral blood lymphocyte subpopulations and on leukocyte migration inhibition were studied in 17 children (15 mo to 17 yr old) with null-cell acute lymphoblastic leukemia compared with 30 healthy controls. During remission after induction chemotherapy but before cranial irradiation, the percentages of T, B and null cells were 23.70%, 18.58% and 60.60%, respectively, compared with 64.45%, 23.73% and 10.8% in the controls. The decreases in the T and B cell counts and the increase in the null cell counts compared with the controls were statistically significant. The leukocyte migration indices were 0.833-0.938 vs 0.419-0.625 in the controls. After cranial irradiation the percentages of T, B and null cells were 20.25%, 12.5% and 65.10%, respectively, and the leukocyte migration indices were 0.881-0.887. The depressive effect of the irradiation affected mostly the B cells, and caused no significant changes in the leukocyte migration inhibition. (27 Refs) (In POL)

MUSCULOSKELETAL NEOPLASMS

41. MULTIDISCIPLINARY TREATMENT OF SOFT TISSUE SARCOMAS: AN IMPROVEMENT IN PROGNOSIS.

Abbatucci JS, Boulier N, Mandard AM, De Ranieri J, Tanguy A, Chasle J
Service des Radiations, Centre Francois-Baclesse, route de Lion-sur-Mer, F. 14021 Caen Cedex, France
Bull Cancer (Paris); 68(5):428-436 1981

The results obtained in the treatment of 45 cases of soft tissue sarcomas are presented. All cases were reviewed and classified according to the modern criteria of malignancy. The treatment schedule comprised: (1) preoperative irradiation: 2 sessions of 6.50 Gy in 48 hr, target volume: whole limb segment; (2) surgical excision 48 hr later with systematic intraoperative histologic verification, until healthy tissue margins are obtained; (3) postoperative irradiation: 3 wk later delivering a cumulative total dose of 50.00 Gy to the preoperative vol and 60.00-70.00 Gy to a reduced vol encompassing the surgical region with protection of vascular axes where possible; (4) chemotherapy: Actinomycin D 0.3 mg/m2 half an hour before the first five sessions of postoperative irradiation; (5) bilateral lung irradiation: four sessions of 3.75 Gy in 7 days to the whole chest. The results were as follows: local recurrence rate was 9.5% at 5 yr. In 21 cases in whom surgical excision was deemed histologically adequate, no recurrences were seen at 3 yr (minimum follow-up). Survival at 5 yr was 77%. Deaths were due to metastatic spread, especially to the lungs. These results show an improvement as compared with historical series. New progress should be sought in combining a more aggressive type of chemotherapy for cases with high metastatic risk. (Author abstract) (32 Refs) (In FRE)

42. RADIOTHERAPY FOR MALIGNANT MELANOMA: A RE-APPRAISAL.

Harwood AR, Cummings BJ
Dept. Radiation Oncology, Princess Margaret Hosp., 500 Sherbourne St., Toronto, Ontario M4X 1K9, Canada
Cancer Treat Rev; 8(4):271-282 1981

Indications for radiotherapy (RT) of cutaneous melanoma were evaluated by review of clinical and radiobiological literature, which shows that the disease is not a radioresistant tumor. Indications for RT in lentigo maligna (LM), lentigo maligna melanoma (LMM), superficial spreading melanoma (SSM), and nodular melanomas (NM) are discussed. Results of RT using the Miescher technique and of conventional RT in LM and LMM, results of RT for SSM, results of local excision and postoperative radiation of NM, and results of RT in 0, 7, and 21 fractionated doses, are presented. Fractionated RT plays a substantial role in treatment of LM and LMM, particularly in those of the head and neck. NM arising de novo is not a radioresistant tumor. Evidence suggests that large dose per fraction RT is more effective than conventional RT in the treatment of NM. NM is a tumor with variable radiosensitivity. Local excision and large dose per fraction (4,500 rad in 10 fractions) RT is indicated in NM of the head and neck where wide excision might not be possible or where cosmetic factors are important, in patients with NM following lymph node dissection who are at high risk of developing local or regional recurrence. Such RT produces a high response rate and long-term control of NM recurrent after surgery, or where it is primarily unresectable. Palliative RT is of benefit for relief of symptoms from distant metastases from melanoma. (39 Refs)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

43. ON THE PROBLEM OF RADIOTHERAPEUTIC MEASURES IN ADDITION TO CHEMOTHERAPEUTIC TREATMENT OF THE MICROCELLULAR BRONCHIAL CARCINOMA: ANALYSIS OF RECURRENCE RATES.

Schulz U, Niederle N, Seeber S
Strahlenklink am Klinikum der GHS, Hufelandstr. 55, D-4300 Essen 1, W. Germany
Strahlentherapie; 157(10):628-632 1981

Eighty-three patients with small-cell bronchial carcinomas were treated with a combination of cytostatic chemotherapy ('ACO II' = adriamycin, cyclophosphamide, vincristine) and irradiation of the mediastinum, the tumor umbra and the affected hilum with a focal dose of 30 Gy administered within a period of 3 to 4 wk. During the same period, those patients presenting the favorable initial stage 'limited disease' (LD) were additionally submitted to a prophylactic total brain irradiation with a dose of 30 Gy. Forty-two among 55 patients of Stage LD had a complete remission. Among these 42 patients, 14 had an intrathoracic recurrence, 9 of them within the irradiation field. A cerebral recurrence after prophylactic brain irradiation was found in 5 of 42 cases. The conclusion is drawn that the irradiation dose which has to be administered into little intrathoracic fields must be increased. A dose of 45 Gy within 4 1/2 wk is desirable. It seems that a prophylactic brain irradiation is only efficient in patients with a favorable prognosis (LD, CR). (Author abstract) (37 Refs) (In GER)

44. RADIATION THERAPY IN THE MANAGEMENT OF PATIENTS WITH MESOTHELIOMA.

Gordon W, Antman KH, Greenberger JS, Weichselbaum RR, Chaffey JT
(c/o Greenberger) Dept. Radiation Therapy, Joint Center Radiation Therapy, Harvard Medical Sch., 50 Binney St., Boston, MA, 02115
Int J Radiat Oncol Biol Phys; 8(1):19-25 1982

Twenty-seven patients with malignant mesothelioma were treated with curative (CRT: 8 patients: 5 men, 3 women; 26-60 yr old) or palliative (PRT: 19 patients: 18 men, 1 woman; 9-77 yr old) radiotherapy. Radical surgery was performed on all CRT patients. Two forms of CRT were planned: implant for small sites of residual disease with radioactive gold seeds or external beam radiotherapy to sites outlined as foci of residual disease by surgical clips placed intraoperatively. CRT was delivered to the chest postoperatively in 5/8 patients. Lung irradiation was also delivered to one patient who had received preoperative chest irradiation. Abdominal CRT was administered to two patients. CRT doses ranged from 5,600 rad in 43 days to 2,200 rad in 15 days. Combination adriamycin-containing chemotherapy regimens were used in 5/8 patients. Of eight patients, one achieved a 2-yr disease-free interval, one had persistent abdominal disease at 18 mo, and the other six suffered local recurrence within 8-13 mo of treatment initiation. PRT doses ranging from 800 rad in two fractions to 5,700 rad in 29 days were administered for treatment of pain (8 patients), superior vena cava obstruction (3), dyspnea or bronchial obstruction (5), difficulty in swallowing (1), and brain metastases (1). Complete relief of symptoms was achieved in one patient, significant relief of pain or shortness of breath in four, and moderate relief in six. Doses of 4,000-5,000 rad delivered in six courses produced significant relief of symptoms in four patients. Lower doses did not effectively relieve symptoms. (18 Refs)

45. RADIOTHERAPY OF THE THYMOMA.

Lindner H, Burger K, Atzinger A
Institut und Poliklinik fur Strahlentherapie und radiologische Onkologie, Klinikums rechts der Isar, Langerstr. 3, D-8000 Munchen, W. Germany
Strahlentherapie; 157(8):487-498 1981

A report is given on 24 thymomas irradiated between 1971 and 1980. Ten patients were irradiated after a radical thymectomy, 3 after partial resection and 11 after histologic diagnosis alone. The patients were treated by different irradiation methods, mostly with the photons of a Co60 unit and a 43 MeV betatron. The average focal dose was 45 Gy which were administered within 5 wk. The observation period was 5 yr on an average. The general 5-yr survival probability was 54%; some partial collectives were evaluated individually. These studies show that by unique radiotherapy, too, a 2-yr survival rate of 100 % and a 5-yr survival rate of 50% as well as a local recurrence rate of about 20% can be reached. Patients under 40 yr with epithelial thymomas and a dose of less than 40 Gy have a less favorable prognosis. Compared to other authors, a relatively high rate of remote metastases was observed which necessitated extensive follow-up measures and suggests an adjuvant chemotherapy. (Author abstract) (44 Refs) (In GER)

INSTRUMENTATION AND TECHNOLOGY

46. IMPROVEMENT OF THE RADIOLOGICAL PROTECTION IN THE INTERSTITIAL RADIOTHERAPY WITH RADIOGOLD SEEDS.

Schmidt J
Radiologische Klinik der Stadtischen Krankenanstalten Bielefeld-Rosenhohe, Rosenhohe 27, D-4800 Bielefeld 14, W. Germany
Strahlentherapie; 157(1):29-32 1981

In spite of all its advantages, the interstitial therapy with radiogold seeds has the disadvantage to expose the staff to a higher radiation loading than other nuclides and therapy methods. For the application of an implantation cannula with linear arrangement of the radiogold seeds before the ejector (according to Hellriegel), the authors propose a simple device which can be self-fabricated, to protect from gamma radiation during transport and laying down to the set ready for use. Construction and application are described. At a distance of 10 cm from the lead container, the radiation dose amounts to 0.3 mR/hr per 1 mCi (37 MBq) of the activity of the seeds. The use of interstitial radiotherapy is also possible in small departments. The authors inform about their practical experiences gained during the treatment of 26 patients. (Author abstract) (8 Refs) (In GER)

47. A NEW TYPE OF RADIOACTIVE WIRES AND 'HAIRPINS' FOR THE INTERSTITIAL CURIETHERAPY OF MALIGNANT TUMORS.

Michailov MI, Majkarov SA, Sachatschiev AA, Mouschmov MD, Teherani DK
(c/o Teherani) Institut fur Biologie, Forschungszentrum Seibersdorf, A-2444 Seibersdorf, Austria
Strahlentherapie; 157(1):25-28 1981

A new method has been developed for the production of radioactive wires and 'hairpins' showing a linear increase of specific activity from their middle up to their ends. The advantages offered by these wires and 'hairpins' have been introduced with good results in a series of new implantation methods for the interstitial curietherapy of malignant tumors. (Author abstract) (15 Refs) (In GER)

48. METHODS FOR ROUTINE CALIBRATION OF BRACHYTHERAPY SOURCES.

Williamson JF, Khan FM, Sharma SC, Fullerton GD
Dept. Therapeutic Radiology, Univ. Minnesota Hosp., Minneapolis, MN, 55455
Radiology; 142(2):511-515 1982

Two types of routine geometry calibrators, the nuclear medicine dose calibrator and a Lucite jig holding a 30-ml external beam ion chamber with the source in a rigid geometry, were compared with open-air measurements for 137Cs, 192Ir, and 226Ra brachytherapy sources. The proximity of scattering s urfaces in the second apparatus resulted in significant distortion of the buildup effect and deviation from the inverse square law (5% to 15%). For the dose calibrator, the response/Roentgen was found to be dependent not only on source energy, but on source capsule thickness as well. Approximately one half of the observed variation (27%) in calibration factors was accounted for by differences in filtration among sources. A mathematical logarithm that corrects for these geometric and filtration effects is presented. In addition, the activity assay procedure provided by the manufacturer of the dose calibrator is shown to be unsuitable for brachytherapy sources. Steps to overcome these problems are discussed. (Author abstract) (17 Refs)

49. RADIATION PARAMETERS OF 6 TO 20 MEV SCANNING ELECTRON BEAMS FROM THE SATURNE LINEAR ACCELERATOR.

Pfalzner PM, Clarke HC
Physics Dept., Ontario Cancer Treatment and Res. Foundation, Ottawa Clinic, 190 Melrose Ave., Ottawa, Ontario K1Y 4K7, Canada
Med Phys; 9(1):117-120 1982

Depth doses of the scanning electron beams from the Saturne Therac-20 linear accelerator at nominal energies of 6, 9, 13, 17, and 20 MeV were measured in polystyrene using a thin window parallel plate ionization chamber. Central axis depth dose curves are derived and are analyzed according to the method of Brahme and Svensson. For each of the five electron energies, values are obtained for the most probable energy at the absorber surface Ep,0, the practical range Rp, the 50% range R50, the therapeutic range R85, the electron dose gradients, total collision energy losses, and other radiation parameters, and these are compared to corresponding values for electron beams from a 22 MeV medical microtron and a 20 MeV betatron. (Author abstract) (5 Refs)

50. MEASUREMENT OF THE NEUTRON STRAY RADIATION IN THE IRRADIATION FIELDS OF MEDICAL ELECTRON ACCELERATORS.

Ewen K, Sprengel V
Zentralstelle fur Sicherheitstechnik, Strahlenschutz und Kerntechnik, die Gewerbeaufsicht Landes Nordrhein-Westfalen, Gurlittstrasse 53a, D-4000 Dusseldorf, W. Germany
Strahlentherapie; 157(11):730-737 1981

The neutron and photon dose as well as the effective neutron energy were determined by means of albedo dosimetry for four different electron accelerators (2 linear accelerators and 2 betatrons). Thermoluminescence dosimeters (TLD) were used as detectors. The neutron dose can be calculated from the difference of the measured values of TLD 600 (6LiF)-sensible to neutrons and gamma rays- and TLD 700 (7LiF)-sensible only to gamma rays. The following aims were pursued: (1) hints regarding the construction of a radioprotection against neutrons, (2) information about the exposure to radiation of the patient because of neutron stray radiation outside the useful irradiation field. (Author abstract) (16 Refs) (In GER)

51. RESULTS OF LOCAL TRANSURETHRAL HIGH FREQUENCY HYPERTHERMIA IN BLADDER CARCINOMA.

Bichler KH, Harzmann R, Flachenecker G, Fastenmeier K, Altenahr E, Gericke D, Fluchtner SH
Urologische Abteilung, Universitatskliniken, Calwer Strasse 7, D-7400 Tubingen, W. Germany
Urologe [A]; 21(1):12-19 1982

Local, transurethral high-frequency hyperthermia (HFH) was used to treat 64 patients (49 men, av age 66.6 yr and 15 women, av age 67.0 yr) with bladder tumors (53 urothelial carcinomas, 5 squamous cell carcinomas, 3 bladder metastases of previously treated carcinoma of the renal pelvis, 2 adenocarcinomas, and one fibrosarcoma). During a 48-mo observation period 21 patients (17 men and 4 women) died 2-26 mo after treatment. Most (61.9%) of the patients who died had tumors in Stage T3G3. The mortality rate was 46.6% for patients with T3G3 tumors and 100% for patients with T4 tumors. The mortality rate for patients with T3G2 tumors was 66.7%, but the difference from the rate for T3G3 tumors was not significant. No patients with tumors in stages T1G1, T1G2, T2G1, or T2G2 died. Results indicated that HFH did not improve the prognosis for T4 tumors or advanced adenocarcinoma of the bladder. HFH produced tumor-specific damage to tumor tissue without causing permanent side effects in normal tissue. HFH produced tumor necrosis and stromal hyalinosis. Palliative effects included reduction in tumor volume, improvement in local operability, and interruption of tumor-related macrohematuria. (36 Refs) (In GER)

52. WHOLE-BODY HYPERTHERMIA AND CHEMOTHERAPY FOR TREATMENT OF PATIENTS WITH ADVANCED, REFRACTORY MALIGNANCIES.

Herman TS, Zukoski CF, Anderson RM, Hutter JJ, Blitt CD, Malone JM, Larson DF, Dean JC, Roth HB
Section Hematology Oncology, Little Rock Veterans Admin. Medical Center, 300 E Roosevelt Road, Little Rock, AR, 72205
Cancer Treat Rep; 66(2):259-265 1982

Eleven patients with unresponsive, disseminated cancers received 30 treatments with whole-body hyperthermia (WBH) and chemotherapy. The protocol was designed to treat patients at 42.0 C, 42.2 C, and 42.4 C for 2.5-3 hr (depending on tolerance) in successive treatments given 7-10 days apart. WBH was accomplished in six patients using heated blankets and in five patients by heating extracorporeally circulated blood. Fourteen treatments were at 42.0 C, 8 at 42.2 C, 6 at 42.4 C, and 2 at 41.8 C. Twenty-seven treatments (90%) lasted greater than or equal to 2.5 hr. At peak temperature, seven patients received 60 mg/m2 of cisplatin iv and four patients received 50 mg/m2 of BCNU (carmustine) iv (1 patient also received 300 mg/m2 of methyl-GAG iv over 2 hr on each of 3 days prior to WBH and BCNU). Six of 10 evaluable patients (60%) achieved a partial remission (median duration, 9 wk; range, 5-24): two of three patients with melan oma, two of three with colon carcinoma, one of two with sarcoma, and one of two with lymphocytic malignancies. No response advantage was observed for either heating modality or for any drug regimen. Major toxic reactions included hypotension during and after treatment, a 'capillary leak' syndrome associated with pulmonary edema, and disseminated intravascular coagulopathy. Two patients died as a result of these complications (both after treatment at 42.0 C). Subjective complaints related to therapy were associated with superficial burns (in patients treated with blankets) and generalized fatigue. Technical advances that have decreased the severe toxicity of treatment are discussed. In addition, methods are proposed to screen for responsive patients and to maximize antitumor interactions of chemotherapy and WBH. (Author abstract) (15 Refs)

PRE-CLINICAL STUDIES

53. THE EFFECT OF DOSE RATE AND ADRIAMYCIN ON THE TOLERANCE OF THORACIC RADIATION IN MICE.

Sherman DM, Carabell SC, Belli JA, Hellman S
(c/o Hellman) Dept. Radiation Therapy, Joint Center for Radiation Therapy, 50 Binney St., Boston, MA, 02115
Int J Radiat Oncol Biol Phys; 8(1):45-51 1982

The effect of pre-administration of adriamycin (ADR: 8 mg/kg iv) on radiation tolerance of the lung and esophagus was studied in male C3H-HeJ mice. For the three radiation dose rates of 5, 15, and 70 rad/min, the LD50 curves for oral-esophageal mortality calculated from deaths occurring in the first 30 days (LD50/30) were 2,723, 1,880, and 1,900, respectively. Pulmonary death LD50/160-30 values were 2,574 and 1,636 rad for 5 and 70 rad/min. The dose of radiation necessary to give pulmonary and gastrointestinal toxicity was markedly reduced when ADR was administered 24 hr before irradiation. With a 1-wk interval between ADR administration and irradiation, only the high-dose (1,600 rad) group showed an increased effect. The effect of ADR on the dose rate effect was analyzed. For the same dose of radiation, higher mortality was observed for the higher dose rate (70 rad/min) than with the lower dose rate (5 rad/min). For pulmonary toxicity, a similar difference was observed. The trend for both oral-esophageal and pulmonary mortality indicated that ADR reduces the importance of the dose rate of radiation. Enhancement ratios were calculated. (23 Refs)

54. DIFFERENT EFFECTIVENESS OF HYPERTHERMIA WITH REGARD TO FAST ELECTRONS AND X-RAYS WITH DIFFERENT ENERGY SPECTRA.

Schrader-Reichhardt U, Markus B

Abteilung fur Strahlenphysik und Strahlenbiologie, Radiologischen Universitatsklinik, v.-Sieboldstr. 3, D-3400 Gottingen, W. Germany

Strahlentherapie; 157(8):544-552 1981

The synergistic enhancement of the irradiation effect by mild (40.5 C) and strong (43 C) hyperthermia (TER = temperature enhancement ratio) was examined for different sparsely ionizing radi ation qualities (15 MeV electrons in two irradiation depths corresponding to a relative depth dose of 100% and 30%, 200-kV and 29-kV-x-rays). Hypotetraploid ('4n') and diploid (2n), asynchronous, exponentially growing CHO fibroblasts were used as experimental subjects. The survival in the colony test was used as criterion to assess the effect. The experiments carried out with 4n cells showed that, for the two temperatures, the TER decreases with increasing ionization density, and, when applying fast electrons producing an extremely sparse ionization in an irradiation depth of 100%, the TER shows a maximum increase as compared to the more densely ionizing radiation qualities. Already when mild hyperthermia is employed, fast electrons show a TER of 1.25 which rises to about 2.25 at 43 C. In case of 29-kV-x-rays, these values amount to 1 and 1.66 respectively. As to the 2n cells, the TER reaches here the double value and seems to be similarly dependent on the ionization density. (Author abstract) (41 Refs) (In GER)

☉ U. S. GOVERNMENT PRINTING OFFICE: 1982—361-847/121

AUTHOR INDEX WITH CITATION NUMBERS

Abbatucci JS 41
Abt AB 38
Adams GL 29
Adler SJ 6
Akuamoa-Boateng 30
Altenahr E 51
Anderson RM 52
Antman KH 44
Appelbaum EL 34
Atzinger A 45
Augsburger JJ 28
Bamberg M 5
Bataini JP 33
Batata M 11
Bedwinek J 3
Belli JA 53
Benson RC 15
Berg-Schlosser 1
Bichler KH 51
Bjornsson M 20
Blitt CD 52
Boulier N 41
Boulis Wassif S 7
Bronz L 18
Bronz L 19
Brown GC 28
Brugere J 33
Bruinin F 33
Buchsbaum HJ 23
Budach V 16
Burger K 45
Carabell SC 53
Carter RL 35
Cassisi NJ 25
Castier P 27
Cesarz-Kruz E 40
Chaffey JT 44
Char DH 26
Chasle J 41
Clarke HC 49
Coombs LJ 10
Cummings BJ 42
Cummings KB 10
Dahnert W 39
De Ranieri J 41
Dean JC 52
Dedo HH 37
Dhom G 13
Dickens WJ 25
Dieckmann J 31
Dietz R 13
Dobelbower RR 8
Duvall AJ 29
Einstein AB 10
Ewen K 50
Eyster ME 38
Fallas M-C 27
Fastenmeier K 51
Feldman M 32
Fineberg B 3
Flachenecker G 51
Fletcher GH 32
Fluchtner SH 51
Francois P 27
Freeman CR 24
Fu KK 37
Fukushima S 14
Fullerton GD 48
Gericke D 51
Goepfert H 36
Gordon W 44
Grabstald H 11
Greenberger JS 44
Grimm W 39
Gronroos M 21
Haas R 34
Harwood AR 42
Harzmann R 51
Hasan SM 15
Haselow RE 29
Hawkins IR 10
Hellman S 53
Hering KG 31
Herman TS 52
Herr H 11
Hess F 1
Higi M 16
Hop WC 12
Hutter JJ 52
Jaulerry C 33
Jesse RH 36
Jones AG 15
Jurgenssen OA 4
Karcher KH 4
Kasdorf P 33
Katz A 34
Kawai T 14
Khan FM 48
Kihara K 14
Kleinsorge F 1
Kogelnik HD 4
Koos W 4
Kopper B 13
Kramer S 8
Kundi M 4
Kunz J 18
Kunz J 19
Kutzner J 39
Larson DF 52
Latourette HB 23
Lee J 3
Leer JW 9
Liebner EJ 34
Lifshitz SG 23
Lindberg RD 36
Lindner H 45
Lngenhorst BL 7
Lowman JG 38
Lukas A 40
Lukas W 40
Maisel RH 29
Majkarov SA 47
Malone JM 52
Mandard AM 41
Mantravadi R 34
Marks G 8
Marks JE 6
Markus B 54
Michailov MI 47
Million RR 25
Mohiuddin M 8
Morgenroth K 31
Mouschmov MD 47
Niederle N 16
Niederle N 43
Penick G 10
Perez C 3
Pfalzner PM 49
Phillips TL 26
Phillips TL 37
Pichler E 4
Pittam MR 35
Poncet P 33
Prignitz R 1
Quivey JM 37
Rao DV 3
Reinartz G 4
Roman TN 24
Roth HB 52
Sabato D 34
Sachatschiev AA 47
Sanborn G 28
Sauer R 2
Savino PJ 28
Schatz NJ 28
Scherer E 5
Schlise S 15
Schmidt J 46
Schrader-Reichh 54
Schreiner WE 18
Schreiner WE 19
Schroder C 30
Schulz U 16
Schulz U 43
Seeber S 43
Sharma SC 48
Sherman DM 53
Shibata HR 24
Shields JA 28
Shipley WU 10
Shrewsbury D 29
Singleton GT 25
Skolnik E 34
Smith JA 11
Sogani PC 11
Sommer F 13
Sonta-Jakimczyk 40
Sorbe B 20
Sprengel V 50
Sroczynska M 40
Streffer C 5
Stryker JA 38
Taina E 17
Taina E 21
Taina E 22
Takeda T 14
Tamulevicius P 5
Tanguy A 41

Teherani DK 47
Tewfik FA 23
Tewfik HH 23
Van de Velde CJ 9
Van der Werf-Me 12
Vierhout PA 9
Weichselbaum RR 44
Whitmore WF 11
Will CH 31
Will TH 30
Williamson JF 48
Woodhouse RJ 37
Zaunbauer F 4
Zimmermann U 1
Zukoski CF 52

INTERNATIONAL CANCER RESEARCH
DATA BANK

Compilation of Experimental Cancer Therapy Protocol Summaries

April 1982
Sixth Edition

COMPLIMENTARY COPIES
NOW AVAILABLE

CONTENT

This document contains summaries of over 1200 open experimental clinical cancer therapy protocols from countries around the world.

Open protocols are arranged in sections according to the specific type of cancer.

Protocols closed in 1981 are listed by title, number, and investigator in a separate section.

INDEXES

- Tumor index
- Agent/Modality index
- Protocol identification number index

Mail to:
Compilation Request
ICRDB Program
National Cancer Institute
Westwood Building Room 10A18
Bethesda, Maryland 20205

Request for 1982 COMPILATION.
(Print Clearly for use as mailing label)

Name: ____________________

Address: ____________________

____

City/State/Zip: ____________________

Country: ____________________

CANCER INFORMATION? CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • CANCERLINE • JUST MENTION OUR NAME

Mention CANCERLINE to your librarian and the world's foremost collection of cancer information is at your disposal. With the help of this computerized data system, you can obtain information on the following:

Cancer Literature

The literature date base, **CANCERLIT**, allows you to survey more than 3,000 biomedical journals for information on your topic of interest. Your search will also alert you to meeting proceedings, monographs, and books published in that area. Informative abstracts averaging 200 words are provided with each citation;

Current Cancer Research

The data base **CANCERPROJ** allows you to retrieve descriptions of current work in any cancer research area. The descriptions, which state research objective, methodology, and experimental results, are supplied for projects underway in 77 countries around the world.

Cancer Therapy Protocols

The **CLINPROT** section of CANCERLINE is designed primarily for clinicians. It provides detailed summaries of currently active experimental protocols for any cancer site, agent, or type.

Ask your biomedical librarian about CANCERLINE.

CANCERLINE is sponsored by the International Cancer Research Data Bank—a program of the National Cancer Institute.

CANCERLINE

VIDEOTAPES

ON CURRENT TOPICS IN CANCER RESEARCH

A pilot project of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute

Three series are available . . .

THE RELATION OF CARCINOGEN ACTION ON DNA TO CELL TRANSFORMATION

PETER MAGEE Fels Research Institute	*Keynote Address*	#VK01 28 min.
JAMES K. SELKIRK Oak Ridge National Laboratories	*Metabolic Activation and Macromolecular Binding of Chemical Carcinogens*	#VK02 51 min.
PHILIP C. HANAWALT Stanford University	*Cellular Responses to Damaged DNA*	#VK03 54 min.
CHARLES HEIDELBERGER University of Southern California	*Mutagenesis and Oncogenic Transformation of Mouse Embryo Cells*	#VK04 54 min.
FRED RAPP Milton S. Hershey Medical Center	*The Interaction of Herpesviruses and Host Cells Leading to Latency or Transformation*	#VK05 52 min.
	Panel Discussion	#VK06 31 min.

MECHANISMS OF METASTASIS

ISAIAH FIDLER Frederick Cancer Research Center	*The Heterogeneous Nature of Cancer Metastasis and Implications for Therapy*	#VB01 47 min.
GEORGE POSTE Smith, Kline and French Laboratories	*Phenotypic Analysis of Metastatic Cell Populations*	#VB02 42 min.
LANCE LIOTTA National Cancer Institute	*Tumor Cell Invasion of Basement Membranes and Extracellular Matrices*	#VB03 33 min.
EVERETT SUGARBAKER Miami Cancer Institute	*Some Clinical Characteristics of Metastasis in Man*	#VB04 41 min.

AUTOMATED CYTOLOGY

Part One: Principles and Techniques	#VB05 56 min.
Part Two: Biological Applications	#VB06 52 min.

VIDEOTAPES ON CURRENT TOPICS IN CANCER RESEARCH are in the 3/4" U-matic format and can be played on video equipment which accepts the NTSC standard (the standard for videotapes produced in the U.S.). The two Automated Cytology tapes (#VB05 and #VB06) are also available in the PAL format.

The videotapes are available on a loan basis. If you would like to schedule viewing for your group, or for more information, please write to:

Videotape Coordinator
ICRDB Program
Westwood Building, Room 10A18
Bethesda, MD 20205

Please specify three choices for viewing dates, and the tapes desired.

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). CANCERGRAMS are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT 15/82/08

NCI/ICRDB/CT15 82/08

PB82-939008

ICRDB CANCERGRAM

CLINICAL TREATMENT OF CANCER

Radiation Therapy

SERIES CT15 No. 82/08

AUGUST, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy ***If this Cancergram is useful and valuable, please send your comments to the CIDAC address below, since future editions depend on user satisfaction and user needs:***

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr., M.D.

NEWARK PUBLIC LIBRARY

SEP 9 1982

U. S. GOVT. PUBS.
DEPOSITORY 336

VISIT THE ICRDB EXHIBIT AT THE INTERNATIONAL CANCER CONGRESS IN SEATTLE, SEPTEMBER 8-15: MEET THE ICRDB STAFF, FIND OUT WHAT'S NEW, AND GET A FREE CANCERLINE SEARCH ON THE SPOT.

In this issue:

- **BREAST NEOPLASMS** 1-5
- **CENTRAL NERVOUS SYSTEM NEOPLASMS** 6-10
- **DIGESTIVE NEOPLASMS** 11-15
- **GENITOURINARY NEOPLASMS** 16-20
- **GYNECOLOGIC NEOPLASMS** 21-26
- **HEAD AND NECK NEOPLASMS** 27-31
- **HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS** 32-37
- **MUSCULOSKELETAL NEOPLASMS** 38-41
- **RESPIRATORY AND CARDIOVASCULAR NEOPLASMS** 42-46
- **INSTRUMENTATION AND TECHNOLOGY** 47
- **PRE-CLINICAL STUDIES** 48-52

BREAST NEOPLASMS

1. THE PLACE OF RADIOTHERAPY AS A PRIMARY MANAGEMENT OF BREAST CANCER.

Nervi C, Arcangeli G, Danesi DT, Creton G
Istituto Medico e di Ricerca Scientifica, Via Luigi Bodio 58, 00191 Rome, Italy
Tumori; 68(1):73-80 1982

From March 1972 to November 1979 a total of 157 patients with Stage I to III primary breast cancers have been irradiated after segmental resection (12 cases), tylectomy (89 cases) or biopsy (56 cases). Complete local control was achieved in all

HE 20. 3173/2:

Stage I lesions, in 97% Stage II lesions and in 68% Stage III lesions. Nonrecurrence has been observed in patients previously operated by segmental resections, while local failures occurred in 6/89 and in 16/56 patients operated by tylectomy or biopsy, respectively. Of the 28 Stage I patients, 24 (86%) are alive, 1 with distant metastases. Four patients of this group are dead, two of intercurrent disease and two of breast cancer. Of the 61 (Stage II) patients, 38 (62%) are alive, 5 of these with distant metastases. Twenty-three patients are dead, 15 with active disease, and 8 suffered intercurrent death. Of the 68 Stage III patients, 21 (31%) are alive, 6 of these with distant metastases. Forty-seven patients are dead, 43 of breast cancer and 4 of intercurrent disease. The high probability of initial subclinical deposits is evidenced by the fact that 49 of the 68 patients in this group developed distant metastases. The patients with T1 lesions appear to comprise the most favorable group with a relapse free survival at 5 yr of 76%. The 5-yr relapse free survival was 62% for T2 lesions and 25% for T3 and T4 lesions. N0 status does not confer the same favorable prognosis as T1 status. N+ status, however, resulted in a definitely negative prognostic factor. Cosmetic results after our treatment approach appear to be extremely good. A marked difference between the irradiated and contralateral breast occurred only in 10 of the 125 patients after a minimum of 2 yr' observation. (Author abstract) (27 Refs) (In ITA)

2. TREATMENT OF EARLY BREAST CANCER WITH PRIMARY RADIATION THERAPY: RATIONALE, RESULTS, AND TECHNIQUES.

Weissberg JB, Prosnitz LR

Dept. Therapeutic Radiology, Yale Univ. Sch. Medicine, 333 Cedar St., New Haven, CT, 06510

Bull NY Acad Med; 58(2):203-213 1982

Rationale, results, and techniques of primary radiation therapy (RT) for early breast cancer (BC) treatment are reviewed. RT is a local form of therapy designed to kill cancer cells within the treatment area. RT has a great advantage over surgery in preserving the breast and producing superior functional and cosmetic results. Radical surgery (RS) is viewed as inadequate treatment for advanced disease not only because of distant metastases but because of the frequency of local recurrence. Primary RT without mastectomy for operable BC has been used for several decades. Two hundred and ninety-three patients with BC in Stage I and II, were treated with primary RT without mastectomy. Five yr survival rates were 91% for Stage I and 77% for Stage II. The overall local recurrence rate was 8%. Complications occurred in 40 patients, the great majority of which was not serious. No fatalities were attributed to the treatment. Results of other studies suggest that lumpectomy is advantageous when RT without mastectomy is undertaken. Patients undergoing primary RT receive a dose of 4,500-5,000 rad over 5 wk, 5 fractions/wk, administered to the entire breast. If the axillary nodes contain metastases, supraclavicular and internal mammary nodes are irradiated. Following completion of large beam therapy, a boost dose is administered to the area where primary tumor was originally located. The purpose of the boost dose is to minimize the volume being treated and to avoid completely any damage to the underlying tissues. The patient is usually given an additional 1,600-2,000 rad in fractions of 200 rad each. (32 Refs)

3. THE MANAGEMENT OF BREAST CARCINOMA BY PRIMARY RADIOTHERAPY AT MOUNT SINAI HOSPITAL FROM 1962-1979.

Balawajder I, Antich PP, Boland J

(c/o Boland) Dept. Radiotherapy, Mount Sinai Sch. Medicine, 1 Gustave L. Levy Place, New York, NY, 10029

Cancer; 49(8):1587-1596 1982

Two-hundred eight patients with carcinoma of the breast were treated with megavoltage irradiation as the primary method of local management at Mount Sinai Hospital between 1962-1979. The effects of treatment volume, technique, and other parameters are discussed for the Stage I and II patients, together with the importance of tumor size and nodal status in control of local disease and distant metastases. In this series the cumulative probability of freedom from metastases is 93 +-5% when the irradiation is confined to the breast and axilla as compared with 72 +-9% when extended fields are used, with no difference in local control. Based on these results it was decided to confine irradiation to the breast and axilla alone in the majority of early stage cancer patients. Recommendations are made for radiation techniques and dosages to optimize control of the disease, minimize complications, and facilitate systemic therapy in patients with positive nodes. (Author abstract) (30 Refs)

4. RESULTS IN PATIENTS WITH BREAST CANCER TREATED BY RADICAL MASTECTOMY AND POSTOPERATIVE IRRADIATION WITH NO ADJUVANT CHEMOTHERAPY.

Tapley ND, Spanos WJ, Fletcher GH, Montague ED, Schell S, Oswald MJ

(c/o Fletcher) Radiotherapy Dept., Univ. Texas, M.D. Anderson Hosp., 6723 Bertner Drive, Houston, TX, 77030

Cancer; 49(6):1316-1319 1982

In 1963 an electron beam became available, making irradiation of the chest wall technically easy. In addition to peripheral lymphatic irradiation in patients with positive axillary nodes and/or the tumor in the inner quadrants or centrally located, patients with tumor larger than 5 cm or with grave signs and/or a significant incidence of positive axillary nodes received chest wall irradiation. None of the patients has received elective chemotherapy. Disease-free survival rates at 10 yr are 54% for the overall group, 79% for the patients with negative nodes, 44% for patients with positive nodes, 61% for patients with 1-3 positive nodes, and 33% for patients with four or more positive nodes. The incidence of peripheral lymphatic failures is low as well as the incidence of failures on the chest wall in the patients having had chest wall irradiation. With the availability of electron beam and adjustments in doses, complications are nonexistent. The incidence of treatment failures, local-regional, or distant, that have appeared by 10 years are compared with the incidence of failures that were experienced by the placebo patients in the clinical trial of the NSABP of thio-TEPA versus placebo. The clearly lesser incidence of treatment failures in the University of Texas M D Anderson Hospital patients either suggests that postoperative irradiation may have survival benefits or that the data of the NSABP series are not representative of all series. (Author abstract) (17 Refs)

5. BREAST CARCINOMA METASTATIC TO THE CHOROID: ANALYSIS OF 67 PATIENTS.

Mewis L, Young SE

Dept. Ophthalmology, Herman Eye Center, 1203 Ross Sterling Ave., Houston, TX, 77030

Ophthalmology (Rochester); 89(2):147-151 1982

During an 8-yr period in which 250 women with breast cancer underwent ocular examination, choroid metastases were found in 58/152 with ocular signs or symptoms and 9/98 without symptoms. Median age of these 67 subjects at diagnosis of choroid involvement was 51 yr (28-71). A median interval of 3 yr (0.5-14.25) had passed since diagnosis of breast cancer. Forty patients had pulmonary metastasis and 30 had CNS metastasis. Most (27) of the pulmonary spread was diagnosed prior to ocular diagnosis, but most of the CNS spread was diagnosed concurrent (15) with or subsequent (13) to ocular diagnosis. Median time to ocular diagnosis after pulmonary diagnosis was 13 mo (1-39). Longest survival after ocular diagnosis was 4 yr with four subjects still alive, but the median was only 9 mo. Metastasis was bilateral in 21 patients initially, rising to 27 within 9 mo, and unilateral in 40 (18 right, 22 left). Survival time did not correlate with the presence or absence of multiple tumors per eye. Radiotherapy was almost universally beneficial to visual acuity (94.2% had stabilization or improvement in vision). Indications for radiotherapy were retinal detachment, actual or threatened decreased visual acuity, or rapid tumor growth during systemic therapy. Dosage recommended was 2,500-3,000 rads in 10 fractions, by the lateral portal. (10 Refs)

CENTRAL NERVOUS SYSTEM NEOPLASMS

6. CURRENT EXPERIENCE WITH STEREOTACTIC IRRADIATIONS IN THE TREATMENT OF HEMISPHERIC GLIOMAS.

Szikla G, Betti O, Szenthe L, Schlienger M

Service de Neurochirurgie B, Centre Hospitalier Sainte-Anne, 1, rue Cabanis, F 75014 Paris, France

Neurochirurgie; 27(5):295-298 1981

Implanted or injected stereotactic irradiation was used in the treatment of 11 malignant gliomas, 28 astrocytomas, and 17 recurrent, low grade gliomas. The mean survival of the patients with malignant gliomas was 12.7 mo, and all patients died. Irradiation treatment for malignant gliomas is recommended because of good tolerance of the treatment. The apparent stabilization for good clinical cases lasted an av 10 mo with subsequent rapid deterioration. Three patients with astrocytomas died 4, 8, and 13 mo after irradiation. There were no clinical or radiographic signs of tumor growth in 19 cases. Functional deficits occurred in four patients, and six patients (21%) showed signs of recurrence after an av remission period of 2 yr without functional loss during that time. Irradiation therapy was associated with the disappearance or diminution of epileptic seizures in several patients in this group. The secretions of the cystic wall were stopped in 15/17 patients receiving injected irradiation. In three patients retreatment was necessary at 1, 2, and 4.5 yr following the original therapy. Immediate surgical risks and late functional loss were low in all groups tested. (10 Refs) (In FRE)

7. ROLE OF RADIATION THERAPY IN THE MANAGEMENT OF MENINGIOMA.

Carella RJ, Ransohoff J, Newall J, Salcman M, Matsui T

Dept. Radiation Oncology, New York Univ. Medical Center, 500 First Ave., New York, NY, 10016

Neurosurgery; 10(3):332-339 1982

Radiation therapy (RT) of 68 patients (49 females, 19 males; 25-80 yr old) with meningiomas is reviewed. Surgery followed by RT was treatment of 43 patients, 42 with known residual tumor and 1 with a malignant meningioma thought to be totally removed. RT was used for 14 patients with recurrence following surgery: combined with surgery in 11 and alone in 3. RT as primary treatment was used in 11 patients without pathological confirmation of tumor. The most common tumor locations were the parasagittal region, on the cerebral convexities, and on the sphenoidal ridge. The usual tumor dose was 5,500-6,000 rad in 6-6.5 wk (range 5,000-7,7000 rad with one patient initially receiving 6,000 rad followed by 4,000 rad for recurrence). Of the 43 patients treated with surgery and postoperative RT, 41 survived and 2 died during follow-up periods of 1-10 yr. All these patients maintained their best neurological classifications. Of the 14 patients treated with RT for recurrence, 5 patients showed improved neurological function, 2 remained unchanged, and 7 deteriorated; 5 patients died of tumor 1-3 yr following treatment. All 11 patients treated with RT alone as initial therapy survived for 3-6 yr; 9 showed neurological improvement and 2 remained stable. Of 11 patients with malignant meningiomas, 3 died of disease. Four case reports are presented illustrating clinical, pathological, and radiological responses. Recommendations are made for use of RT in treatment of meningioma. (12 Refs)

8. INTERSTITIAL BETA-THERAPY OF CYSTIC CRANIOPHARYNGIOMAS.

Volkov AA, Rogulov VA, Novikov AV, Kavalli BK
A. L. Polenov Res. Neurosurgical Inst., Leningrad, USSR
Med Radiol (Mosk); 27(1):42-46 1982

The efficacy of interstitial radiotherapy was evaluated in 35 patients (18 men, 17 women; 6-38 yr old) with cystic craniopharyngiomas. Clinical manifestations of the disease included endocrine disorders, vision disorders caused by stenosis of the optic chiasm and optic nerve, and intracranial hypertension. The patients received a transcerebral injection of radioactive colloids (24 received 198Au, 9 received Cr32PO4, and 2 received 131I-MAA); total dose to the cyst wall was 20,000-40,000 rads. Twelve patients received interstitial radiotherapy alone and 23 received radiotherapy in combination with surgery. Remission or improvement of the clinical state were observed in 29/35 patients. Of 35 patients, 26 died within less than 3 to 18 yr after the treatment (av duration of the survival was 61 mo), and 9 were alive at the time of reporting (av duration of the follow-up was 86 mo). (13 Refs) (In RUS)

9. MEDULLOBLASTOMA IN ADULTS: IMPROVED SURVIVAL WITH SUPERVOLTAGE RADIATION THERAPY.

Kopelson G, Linggood RM, Kleinman GM
31 Country Club Road, Peabody, MA, 01960
Cancer; 49(7):1334-1337 1982

During the period from January 1962-June 1979, 17 adults (greater than or equal to 16 yr of age) received postoperative supervoltage neuraxis radiation therapy for medulloblastoma. An actuarial 5-and 10-yr survival rate of 46% was achieved, and the major site of recurrence postirradiation was in the posterior fossa. Compared to previous pediatric series, adults may demonstrate more visceral metastases and fare less well after tumor recurrence. Compared to prior series of adult patients, the demonstrated improved survival is attributed to increased doses delivered to the posterior fossa. (Author abstract) (30 Refs)

10. ASSESSMENT OF THE LONG-TERM EFFECTS OF PRIMARY RADIATION THERAPY FOR BRAIN TUMORS IN CHILDREN.

Danoff BF, Cowchock S, Marquette C, Mulgrew L, Kramer S
Dept. Radiation Therapy and Nuclear Medicine, Hosp. Univ. Pennsylvania, Philadelphia, PA, 19104
Cancer; 49(8):1580-1586 1982

One-hundred-twelve children with primary brain tumors received definitive radiotherapy between the yr 1958-1979. Sixty-nine patients were alive at intervals of 1-21 yr. Thirty-eight patients underwent neurologic and endocrine evaluation, psychologic and intelligence testing, and assessment for second malignancy post-treatment. A second intracranial malignancy developed in one child, for an incidence of 1.6%. Performance status was good to excellent in 89% of the patients studied. Seventeen percent of the group were mentally retarded. Behavioral disorders were identified in 39% of the patients, 59% of the mothers, and 43% of the fathers. Of the 23 patients with nonparasellar tumors, 6 were found to have growth hormone deficiency, including 2 patients with panhypopituitarism. Disability was related to age under 3 yr at the time of treatment and tumor extension to the hypothalamus. (Author abstract) (33 Refs)

DIGESTIVE NEOPLASMS

11. RESULTS OF DIFFERENT VARIANTS OF RADIOTHERAPY OF ESOPHAGEAL CANCER.

Goldobenko GV
Res. Inst. Medical radiology, Obninsk, USSR
Med Radiol (Mosk); 27(2):17-21 1982

The efficacy of different variants of radical radiotherapy was evaluated in 297 patients with esophageal cancer (254 men, 43 women; 40-70 yr old). All patients were in Stage T3NxM0 or T4NxM0; majority of the patients (72%) had involvement of the middle thoracic region of the esophagus. The patients were divided into five groups. Group 1 included 70 patients who received rotational orthovoltage roentgenotherapy (single dose 150-200 rads, total dose 5,000-7,000 rads). The patients in Groups 2-5 received gamma therapy. The single and total dosages in Group 2 (38 patients) were as in Group 1. Group 3 (105) received split-course gamma-therapy (200 rads/day, 5x/wk, up to 3,200 rads, then 400 rads, qod, up to 2,800-3,000 rads). Group 4 (64) received split-course gamma-therapy (200 rads/day, 6,200-7,100 rads, with 1-3-wk interval after 3,000-3,500 rads). Group 5 (20) received irradiations as in Group 3 and metronidazole during the second stage (150 mg/kg, 4 hr prior to irradiation). Complete or greater than 50% tumor regression was observed in 66.3% of the patients (54.3% in Group 1, 52.6% in Group 2, 72.4% in Group 3, 67.2% in Group 4, and 100% in Group 5). An overall 1-yr survival was 44.2% (87.5% in Group 5, 68.8% in Group 4, and 29-40% in Groups 1-3). (10 Refs) (In RUS)

12. INTRALUMINAL RADIATION FOR ESOPHAGEAL CANCER: A HOWARD UNIVERSITY TECHNIQUE.

Moorthy CR, Nibhanupudy JR, Ashayeri E, Goldson AL, Espinoza MC, Nidiry JJ, Warner OG, Roux VJ
Dept. Radiation Therapy, Howard Univ. Hosp., 2041 Georgia Ave., N.W., Washington, DC, 20060
J Natl Med Assoc; 74(3):261-266 1982

The objective of radiotherapeutic management in esophageal cancer is to accomplish maximum tumor sterilization with minimal normal tissue damage. This sincere effort is most often countered by the differential in tumor dose response vs normal tissue tolerance. Intraluminal isotope radiation, with its inherent advantage of rapid dose falloff, spares the lungs, the spinal cord, and other vital structures, yet yields adequately high doses to esophageal tumor. Though in existence since the turn of the century, the method of intracavitary radium bougie application dropped out of favor due to technical difficulties imposed by the size of the radium source and radiation exposure to the personnel involved. The authors describe a simple 'iridium 192 afterloading intraluminal technique' that eliminates technical problems and reduces radiation exposure considerably. (Author abstract) (6 Refs)

13. INDICATIONS FOR AND RESULTS OF HIGH ENERGY RADIATION IN THE PRE- AND POSTOPERATIVE TREATMENT OF CANCER OF THE RECTUM.

Catterall M
Hammersmith Hosp., London, England
Ann Gastroenterol Hepatol; 18(1):13-17 1982

Radiotherapy of rectal neoplasms with the aid of x-rays, electrons, or neutrons is reviewed. High energy radiation is performed to sterilize regional lymph nodes; to shrink the primary tumor; as an alternative to surgery (especially for tumors in the lower rectum); to treat inoperable, recurrent, or residual tumors; and to palliate symptoms. Adequate preoperative radiotherapy reduces tumor size and usually sterilizes lymph nodes. The best results have been obtained using doses of 6,000 rads given during a period of 6 wk. Complications constitute the radiation dose-limiting factors. Radiation is of less benefit after surgical excision because of the reduction in blood supply and the wide and usually ill-defined vol of potential recurrence. Radiation has been found to make some inoperable tumors operable. Palliative radiotherapy has been reported to relieve pain, tenesmus, mucus discharge, and bleeding in some cases. Fast neutrons and results of neutron therapy are described. (8 Refs)

14. COMBINED RADICAL RADIATION THERAPY AND CHEMOTHERAPY FOR PRIMARY SQUAMOUS CELL CARCINOMA OF THE ANAL CANAL.

Cummings BJ, Rider WD, Harwood AR, Keane TJ, Thomas GM, Erlichman TC, Fine S
Dept. Radiation Oncology, Princess Margaret Hosp., 500 Sherbourne St., Toronto, Ontario M4X 1K9, Canada
Cancer Treat Rep; 66(3):489-492 1982

Radical radiation therapy (5,000 rads in 20 fractions in 4 wk) combined with iv mitomycin (10 mg/m2) and 5-fluorouracil (1,000 mg/m2/24 hr for 4 days) was used to treat 13 patients with locally advanced but operable squamous cell carcinoma of the anal canal. All patients achieved local control and retained anal continence, and none developed metastases. The patients were followed from 4 to 34 mo (median, 12). Severe acute gastrointestinal toxic effects were seen in three patients;

the same patients had significant thrombocytopenia or leukopenia. Treatment with this combined program may allow conservative management of squamous cell carcinoma of the anal and should be considered as an alternative to abdominoperineal resection. (Author abstract) (11 Refs)

15. INTRAOPERATIVE IRRADIATION FOR UNRESECTABLE PANCREATIC CARCINOMA.

Wood WC, Shipley WU, Gunderson LL, Cohen AM, Nardi GL

Surgical Services, Dept. Radiation Medicine, Cox Center, Massachusetts General Hosp., Boston, MA, 02114

Cancer; 49(6):1272-1275 1982

Twelve patients with localized, unresectable, pancreatic carcinoma were treated with a combination of external photon beam and intraoperative electron beam irradiation. Eleven tumors arose in the head and one in the body of the pancreas. Chemotherapy was administered to 6 of the 12 patients. Of the 11 patients who received both intraoperative and external beam irradiation, 4 were alive without evident disease. The median survival is 15+ mo. This pilot study demonstrates the feasibility of combining external beam and intraoperative therapy in a general hospital setting with no operative deaths, a brief postoperative stay, and no wound infections. The late complications of irradiating gastric antrum and duodenum are discussed. (Author abstract) (9 Refs)

GENITOURINARY NEOPLASMS

16. RESULTS OF PREOPERATIVE TELECOBALT IRRADIATION OF MALIGNANT RENAL TUMORS.

Eberhardt HJ, Strietzel M, Raatzsch H, Schorcht J, Hackel W, Kelly U, Voigtmann L

Radiologische Klinik, Medizinische Akademie 'Carl Gustav Carus', Fetscherstr. 74, DDR-8019 Dresden, E. Germany

Radiobiol Radiother (Berl); 22(6):717-725 1981

The results of preoperative and postoperative telecobalt irradiation (PRE-TCI and POS-TCI, respectively) were compared in patients (57% men and 43% women, av age 56 yr) with malignant renal tumors. Tumors were Stage T1 (2%), T2 (8%), T3 (72%), or T4 (19%), with 0-2 lymph node metastases and no distant metastases. Hypernephroid carcinomas accounted for 91% of the cases. Short-term PRE-TCI (4 x 5 Gray on 4 successive days) was administered to 100 patients. Procedures involved regular consultation between urologists and radiologists, supervoltage radiotherapy, renal angiography, and preliminary transperitoneal ligature of renal blood vessels. POS-TCI (28 x 1.8 Gray, 5x/wk, total dose 50 Gray) was administered to 100 patients. Observation of 44 POS-TCI patients and 30 PRE-TCI patients lasted 5 yr. The 5-yr survival rate (5ysr) for both groups was 59%, compared with previously reported 31%. The difference was attributed to close cooperation between urologists and radiologists and to exact angiographic diagnosis. The 5ysr was 55% for POS-TCI patients and 67% for PRE-TCI patients. This difference was not significant. Telecobalt irradiation combined with neutron therapy produced a higher 5ysr (75%) than telecobalt irradiation alone (64%). (9 Refs) (In GER)

1' COMBINED PRE- AND POSTOPERATIVE ADJUVANT ADIOTHERAPY FOR BLADDER CANCER.

Mohiuddin M, Strong GH, Mulholland SG

Thomas Jefferson Univ. Hosp., 11th and Walnut St., Philadelphia, PA, 19107

Urology; 19(2):135-138 1982

Thirty-nine patients with invasive bladder cancer were treated using a new approach to adjuvant radiation therapy. All patients had histologic evidence of bladder muscle invasion on biopsy and were considered suitable for surgical resection. Low-dose preoperative radiation (500 rad) was delivered either on the day of or the day before cystectomy. In most instances, a radical cystectomy was performed and patients were then stratified according to pathologic stagings. Those patients with pathologically good prognostic indicators, Stage B1 low grade (I or II) disease, were followed up with no further treatment. Patients at high risk for local recurrence and pelvic lymph node involvement, Stages B1 high grade (III or IV), B2, and C, were given aggressive postoperative radiation (4,500 rad in 5 wk). Patients with advanced disease, Stage D2, were given palliative therapy. All patients received the dose of preoperative radiation as planned. Preliminary results indicate that combined pre- and postoperative radiation in bladder cancer gives excellent local control of disease. A significant potential for improved long-term survival of patients has been observed. (Author abstract) (19 Refs)

18. PROSTATIC CARCINOMA. EFFICACY OF INTERSTITIAL RADIOTHERAPY.

Reddi RP

Dept. Radiology, St. Joseph Medical Center, 3600 East Harry, Wichita, KS, 67218

J Kans Med Soc; 83(2):61-65,82 1982

Biopsy findings, complications, and survival following treatment of prostatic cancer with 125I is described for 39 patients (31 white, 8 black; 49-83 yr old), none of whom had metastatic disease according to bone marrow aspiration. Patients received 13-44 125I seeds each, implanted into prostate tissue via needles inserted into the organ after completion of pelvic lymph node dissection. Doses within the prostate ranged from 20,000 to 30,000 rad, delivered during 1 yr; the dose decreased to 5% at 2.0 cm. Six patients had positive pelvic lymph nodes and were treated with 6,000 rads (tumor dose) external radiation therapy. Follow-up needle biopsy was performed at two different sites at intervals of approx 12 and 24 mo. The study suggests that 125I seed implantation may be superior to total prostatectomy or external radiation therapy in terms of quality of survival, and is equally effective in prolonging life. External radiotherapy increased morbidity without increasing survival or lengthening disease-free interval. 125I seed implant and pelvic lymphadenectomy has the following advantages: accurate staging, favorable local control, satisfactory survival, low morbidity and mortality rates, shortened hospital stay in most instances, accurate dose adapted to tumor size and shape, and preservation of the functional integrity of pelvic organs. (18 Refs)

19. SEMINOMA OF THE TESTIS: RESULTS OF TREATMENT AND PATTERNS OF FAILURE AFTER RADIATION THERAPY.

Thomas GM, Rider WD, Dembo AJ, Cummings BJ, Gospodarowicz M, Hawkins NV, Herman JG, Keen CW
Princess Margaret Hosp., 500 Sherbourne St., Toronto, Ontario M4X 1K9, Canada
Int J Radiat Oncol Biol Phys; 8(2):165-174 1982

Outcome of surgical and radiation therapy in 444 patients with histological diagnosis of pure seminoma (SE) treated in a single institution is reviewed to define the factors which predict tumor relapse (TR), and to analyze the sites of TR in relation to the treatment. Eighty-nine percent of patients had a radical inguinal orchidectomy (ORD), 14% had some scrotal surgery consisting of trans-scrotal biopsy, drain site or ORD, and 6% had a laparotomy. The staging distribution of patients is presented (76.1% Stage I, 19.4% Stage II, 4.7% Stage III). The 5-yr actuarial survival rate for all patients was 87%, 94% for Stage I, 74% for Stage II, and 35% for Stage III patients. Scrotal surgery at the time of primary treatment in Stage I patients did not predispose to disease recurrence in the abdomen, pelvis, or scrotum. Twenty-seven patients with Stage II disease developed recurrent SE; 10 of these were cured with further irradiation at the time of recurrence. Patients with a palpable mass (Stage IIB) had a greater chance of recurrence in the mediastinum, abdomen, and in distant visceral sites; uncontrolled abdominal disease was a significant problem for these patients. Disease did not recur in the mediastinum and supraclavicular fossa alone in any of the 40 Stage IIA patients. Numbers of Stage III patients surviving according to the distribution of disease at presentation are shown. Patients who presented with mediastinal and supraclavicular disease, but without palpable abdominal or visceral disease, 5/6 were cured with irradiation. In patients presenting with palpable abdominal masses in addition to mediastinal and supraclavicular disease, 2/6 were cured with irradiation. None of the eight patients with visceral disease was cured with irradiation. (21 Refs)

20. RADIATION THERAPY OF TESTICULAR NON-SEMINOMAS.

van der Werf-Messing B, Hop WC
Rotterdamsch Radio-Therapeutisch Instituut, Groene Hilledijk 301, 3075 EA Rotterdam, The Netherlands
Int J Radiat Oncol Biol Phys; 8(2):175-178 1982

Value of the primary radiotherapeutic approach was assessed in 121 patients with non-seminomatous germ cell tumors (NST) in various stages. Subgroups that might benefit from an initially combined modality treatment were identified according to stage and histology. Staging included laboratory tests for chorionic gonadotrophins and alpha fetoprotein. Extent of the disease was classified according to the Tumor, node, and metastasis-classification. At diagnosis significantly more patients in the malignant teratoma undifferentiated (MTU)-group were in a more advanced stage than patients in the malignant teratoma intermediate (MTI)-group. A routine dose of 4,000 rad was given to the target area in a period of approx 4 wk, by 5 fractions/wk. Actuarial survival rates were lower for both groups with increasing lymph node involvement (LNI); for most LNI-categories, patients with MTI had a better prognosis. The risk of pulmonary relapse (PR) was considerably higher in the MTU-group. In case of positive lymph angiography (LAG) the risk of PR was higher than with negative LAG for both MTI- and MTU-group. The group with a low risk of PR was composed of patients with either testis involvement or involvement beyond tunica albuginea, and a negative LAG; PR was approx 9% for both MTI- and MTU-groups. All other groups according to site involvement had a risk of PR of approx 50%. The significant risk difference between the total MTI- and MTU-groups is the result of a higher proportion of favorable patients in the MTI-group. (4 Refs)

GYNECOLOGIC NEOPLASMS

21. THE ROLE OF POSTOPERATIVE LOCAL OR REGIONAL IRRADIATION IN THE TREATMENT OF STAGE I OVARIAN CANCER.

Powlis WD, Mauch P, Ehrmann RL, Rose CM, Knapp RC, Bloomer WD
Royal Victoria Hosp., 687 Quest Avenue des Pins, Montreal H3A 1A1, Quebec, Canada
Radiology; 142(3):747-750 1982

Histological grade and cell type were major prognostic factors in a retrospective study of 63 patients with Stage I epithelial carcinoma of the ovary. Grading by architectural pattern seemed to predict relapse better than cytological grading. With serous, mucinous, and endometrioid cystadenocarcinomas, relapses increased with higher grades. Relapse occurred in none of 18 tumors of borderline malignancy, 2 of 27 (7%) with Grade I or II tumor, and 4 of 6 (67%) with Grade III. The upper abdomen and pelvis were both at risk. Because most recurrences were limited to the peritoneal surface in Grade III serous, mucinous, and endometrioid carcinoma, local and regional radiation therapy are justified; postoperative therapy is not recommended for borderline or Grade I tumors unless ascites or cytological evidence of peritoneal disease is present. Clear-cell carcinoma was uncommon and unfavorable; of 12 cases, 5 involved relapse, with 3 recurrences developing outside the abdomen. (Author abstract) (33 Refs)

22. VALUE OF MULTI-PLANAR CT IMAGES IN INTERACTIVE DOSIMETRY PLANNING OF INTRACAVITARY THERAPY.

Sewchand W, Prempree T, Patanaphan V, Whitley NO, Heidtman B, Scott RM
Dept. Radiation Therapy, Univ. Maryland Hosp., 22 South Greene St., Baltimore, MD, 21201
Int J Radiat Oncol Biol Phys; 8(2):295-301 1982

Application of multi-planar reconstructed computed tomography (MPRCT) and specific application to the treatment planning of intracavitary radium therapy (ICRT) for adenocarcinoma of the endometrium (ACE) are discussed. Demonstration case pertains to a 68-yr-old patient whose chief complaints were post-menopausal vaginal spotting for approx 5 mo. Diagnosis and clinical staging were ACE, clinical Stage II, Grade III. Radiation treatment (RT) comprised of whole pelvis external beam irradiation to a midline dose of 4,000/4 wk, followed by ICRT for 72 hr. Computed tomography (CT) scanning of the pelvis was done on whole body scanner prior to RT, during and after ICRT. Transaxial images and radiographic views are shown. Dose rates at estimated representative node-bearing sites from the technique of orthogonal radiographs are compared with the values obtained by the method of using MPRCT images. The differences in dose rates range from 0.1 to 2.5 rad/hr. Results reflect the displacement of the applicator, the more posteriorly location relative to the cervical os and the tandem, and hence closer to the rectum. Small lapses in the proper positioning of the ovoids and inadequate vaginal packing can result in significant increases in the bladder and rectum dose rates. Major advantage of the MPRCT approach is in the display of dose rate distribution on CT images in multiple plains and the method presents substantially more dosimetry information for immediate clinical evaluation. (19 Refs)

23. A STUDY OF 333 PATIENTS WITH ADENOCARCINOMA OF THE ENDOMETRIUM TREATED BY COMBINED SURGERY AND RADIATION THERAPY (1958-1978).

Reboul F, Andine JP, Bossi G, Reboul G
Service de Radiotherapie, Clinique Sainte-Catherine, 84000 Avignon, France
Sem Hop Paris; 58(9):539-545 1982

Patient characteristics and combined radiosurgical treatment of women (34-92 yr old; mean age 63 yr) with endometrial cancer (204 Stage I, 40 Stage II, 24 Stage III, and 20 Stage IV) are described. Of the 333 patients, 274 were post-menopausal, 26 peri-menopausal, and 32 were premenopausal. Gynecologic and obstetric antecedents and associated diseases are described. Metrorrhagia was found in 224/333 patients. Hysterographic and lymphographic findings are presented. Of the tumors, 261 were well- and 31 medium-differentiated adenocarcinomas; 23 were totally undifferentiated. Premenopausal women had a better 5-yr survival rate (73.2%) as compared with peri-menopausal (59.9%) and post-menopausal (57.0%) women. The survival rates for patients with Stage I-IV cancers were 67.0%, 60.0%, 32.5%, and 10%, respectively. Survival rates for patients with well-, medium-, and undifferentiated tumors were 64.4%, 52.7%, and 5.9%, respectively. The 5-yr survival rate for 203 patients who underwent radiosurgery was 69.1%; for 85 patients considered inoperable and treated with radiotherapy alone, it was 35.2%. Best results were obtained when preoperative curietherapy, surgery, and postoperative radiotherapy were used (75 patients: 80.2% 5-yr survival rate). Of 45 patients treated for recurrence or metastasis, 35 were treated with surgery alone, 7 with radiotherapy alone, and 3 with radiosurgery. Treatment complications included cystitis (12 patients), simple rectitis (43), and minor accidents (55). Curative and palliative treatment of endometrial cancer is discussed. (11 Refs) (In FRE)

24. ANALYSIS OF RESIDUAL DISEASE FOLLOWING PREOPERATIVE RADIOTHERAPY VERSUS INITIAL SURGERY IN ENDOMETRIAL CARCINOMA.

Chung CK, Stryker JA, Nahhas W, Cunningham DE, Mortel R
Div. Radiation Oncology, Dept. Radiology, Milton S. Hershey Medical Center, Pennsylvania State Univ., Hershey, PA, 17033
Int J Radiat Oncol Biol Phys; 8(2):213-218 1982

The correlation between the extent and location of residual tumor after pre-operative radiotherapy (RT) and the tumor grade, clinical and surgical stage and prognosis was studied in 107 patients with Stage I and II carcinoma of the endometrium; 67 patients (33 Stage I, 34 Stage II) received preoperative RT followed by surgery, while 40 patients (Stage I) had initial operation followed by postoperative RT. Histological grade and type, incidence of residual disease (RD) after preoperative RT, site of RD, depth of myometrial and vascular invasion, and clinical staging are presented. Seven of 67 patients and 3/40 patients developed recurrences and died of disease. Recurrences and death occurred in 24 mo (80%) in 8 of those 10 patients and all within 48 mo of treatment. In 16% of patients with RD were cancer related deaths compared to none in 22 patients without RD. The incidence of cancer related deaths was significantly higher in patients with extrauterine disease than in those with RD confined to the uterus. In the initial operation group, the frequency of cancer-related death in patients who had uterine disease only vs extrauterine disease were 3 and 50% respectively. Patients with Grade 3 tumors had significantly more RD, extrauterine spread, and cancer-related death compared to those with Grade 1 or 2. No comparable trends with stage of disease were noted. (10 Refs)

25. LONG-TERM FOLLOW-UP IN RADIATION THERAPY OF CARCINOMA OF THE VAGINA.

Perez CA, Camel HM
Div. Radiation Oncology, Mallinckrodt Inst., 4511 Forest Park, St. Louis, MO, 63108
Cancer; 49(6):1308-1315 1982

A retrospective analysis of 134 patients with histologically confirmed carcinoma of the vagina is reported. Actuarial disease free 5-yr survival was: Stage 0 (15 patients), 90%; I (39 patients), 90%; IIA (39 patients), 58%; IIB (21 patients), 32%; III (12 patients), 40%; IV (8 patients), 0%. Fifteen patients had carcinoma in situ; of these, 14 were controlled with interstitial or intracavitary therapy. Of 39 patients with Stage I carcinoma, 37 (95%) showed no evidence of vaginal or pelvic recurrence. Most of them received interstitial or intracavitary therapy or both; the addition of external beam irradiation did not significantly increase survival or tumor control. In Stage IIA (paravaginal extension) 22 of 34 (64.7%) patients were controlled with a combination of brachytherapy and external beam irradiation; only two of five (40%) treated with brachytherapy alone exhibited tumor control in the pelvis. Eight of 12 Stage III tumors were controlled in the pelvis. Only two of eight patients with Stage IV had no recurrence in the pelvis even with relatively high doses of irradiation. The dose of irradiation delivered to the primary tumor or the parametrial extension was critical in achieving successful results. The incidence of complications (9.7%) is correlated with the stage of the tumor and type of treatment given. (Author abstract) (19 Refs)

26. PLASMA PROSTAGLANDIN LEVELS IN RADIATION-INDUCED ENTERITIS.

Lifshitz S, Savage JE, Taylor KA, Tewfik HH, Van Orden DE
Dept. Obstetrics and Gynecology, Southwestern Medical Sch., 5323 Harry Hines Blvd., Dallas, TX, 75235
Int J Radiat Oncol Biol Phys; 8(2):275-277 1982

The plasma prostaglandin levels were examined in 17 patients (22-72 yr old, mean age 50.9 yr) with gynecologic malignancies selected to begin pelvic irradiation, and investigated whether the changes in the levels of circulating prostaglandins could account for the acute onset of diarrhea and associated gastrointestinal (GI) symptoms arising from radiotherapy. None of the patients had a history of GI disease or had taken medications within 1 wk of initiation of the study. All patients were given 900 rad tumor dose (TD)/wk in five fractions/wk for a total TD of 4,000 to 5,000 rad. The frequency of stools is presented. Thirteen patients (76%) reported three or more watery bowel movements/day. The max number of daily stools reported was seven. Nausea and vomiting were reported by six patients (35%) and intermittent colicky pain of varying intensity by nine (53%). Prostaglandin E (PGE), prostaglandin F (PGF), and 13,14-dihydro-15-keto PGF2alpha metabolite (PGF2aM) plasma levels are presented. Most of the mean PGE and PGF values were above the normal range. The mean PGF2aM values were remarkably constant during treatment ranging from 269-298 picog/ml and all were within normal range. No significant difference was observed among PGE, PGF, and PGF2aM obtained pre-treatment, during treatment, or at 6 wk post-treatment. No correlation was observed between radiation dosage and prostaglandin levels. The distribution of values for PGE, PGF, and PGF2aM observed in the patients are presented. (7 Refs)

HEAD AND NECK NEOPLASMS

27. OCULAR ABSORPTION AND TOXICITY OF A RADIOSENSITIZER AND ITS EFFECT ON HYPOXIC CELLS.

Rootman J, Josephy PD, Adomat H, Palcic B

Dept. Ophthalmology, Univ. British Columbia, 2550 Willow St., Vancouver, British Columbia V5Z 3N9, Canada

Arch Ophthalmol; 100(3):468-471 1982

The recurrence of retinoblastoma after radiation treatment may be related to hypoxic cell radioresistance. Radiosensitizing drugs acting on hypoxic cells without affecting the responses of oxygenated cells could improve treatment of ocular tumors while minimizing complications of radiotherapy. A desmethyl derivative of misonidazole is as effective a radiosensitizer as misonidazole (as measured in vitro) and is better suited to ocular administration, since it is more soluble than misonidazole. We studied the ocular toxic effects of a desmethyl derivative of misonidazole after subconjunctival administration of 140 and 70 mg. The higher dose produced an intolerable ocular toxic effect, but at the lower dose, the toxic effect was moderate and reversible. We compared ocular pharmacokinetics of the desmethyl derivative of misonidazole after subconjunctival and intravenous (IV) injections. Subconjunctival administration yielded vitreous and anterior chamber concentrations of the radiosensitizer sufficient to produce a notable dose-modifying effect (as high as 1.8 in the anterior chamber and 1.25 in the vitreous at 70-mg doses). In contrast, even at doses of 140 mg, IV injections of the desmethyl derivative of misonidazole did not result in therapeutically useful ocular levels. (Author abstract) (15 Refs)

28. DEFINITIVE RADIATION THERAPY FOR CHORDOMA AND CHONDROSARCOMA OF BASE OF SKULL AND CERVICAL SPINE.

Suit HD, Goitein M, Munzenrider J, Verhey L, Davis KR, Koehler A, Linggood R, Ojemann RG

Dept. Radiation Medicine, Massachusetts General Hosp., Harvard Medical Sch., Boston, MA, 02114

J Neurosurg; 56(3):377-385 1982

Proton-beam radiation therapy has been developed for the treatment of chordomas or sarcomas of bone or soft tissue that abut the central nervous system. The authors report the results of treatment of 10 patients, 6 with chordoma, 3 with chondrosarcoma, and 1 with a neurofibrosarcoma. Local control has been achieved for all patients (with, however, one marginal failure) with a follow-up period ranging from 2 mo to 6 yr. High doses of radiation, up to 76 Cobalt Gray Equivalents (CGE), have been delivered without significant morbidity. In particular, no neurological sequelae have been observed. (Author abstract) (12 Refs)

29. PROSPECT FOR THE TREATMENT OF THYROID CANCER WITH POST-OPERATIVE IRRADIATION.

Liaw KY, Chang-Chien Y, Tzen KY, Chen CC, Huang SC, How SW, Chang CC, Chen FW

Dept. Surgery, Coll, Medicine, Natl. Taiwan Univ., Taipei, Taiwan, Republic of China

Taiwan I Hsueh Hui Tsa Chih; 80(11):1240-1252 1981

Between 1958 and 1980, 83 patients (61 females, 22 males) with thyroid cancer were treated with thyroidectomy and postoperative radiation therapy (RT); 63 were treated only with I131 and 20 with Co60 with or without I131 RT. RT was indicated in patients with postoperative residual lesions (17 patients), distant metastases (31), recurrent lesions (7), or those needing prophylactic treatment (28). The mean I131 dose for prophylactic, recurrent, residual, and metastatic lesions was 68, 121, 141, and 182 mCi, respectively. Forty-three patients were followed for 5 yr or more. Five and 10-yr survival rates were, respectively, 100% and 100% for the prophylactic group; 85.7 and 75%, for the recurrent group; 80% and 66.7% for the residual group; and 72.2% and 16.7% for the metastatic group. Five of eight deaths were due to metastatic thyroid carcinoma. Av survival from diagnosis to death was 3.5 yr (range, 6 mo to 9 yr). Use of I131 for treatment of distant metastases and for residual or recurrent tumors is recommended; postoperative irradiation may provide long-term palliation or may be curative in some patients. (11 Refs)

30. RANDOMIZED TRIAL OF CONVENTIONAL VERSUS HIGH FRACTIONAL DOSE RADIATION THERAPY IN THE TREATMENT OF ADVANCED HEAD AND NECK CANCER.

Weissberg JB, Son YH, Percarpio B, Fischer JJ

Dept. Therapeutic Radiology, Yale Univ. Sch. Medicine, 333 Cedar St., New Haven, CT, 06510

Int J Radiat Oncol Biol Phys; 8(2):179-185 1982

The possibility of improving results of radiation treatment of advanced head and neck cancer by alteration in the fractionation of the radiation schedule was studied in 64 patients between 1973 and 1979. Thirty-one patients were randomized to receive 200 rad/day (Group A), and 33 were randomized to receive 400 rad/day (Group B). Twenty-six of the 31 patients or the Group A, and 30/33 of the Group B completed the treatment. The av age of patients was 62 yr in Group A and 66 yr in Group B. Majority of patients in both groups had Stage IV disease. A total dose to the primary lesion of approx 4,400 rad was administered to Group A patients; majority of Group B patients received a total dose of 6,600 rad. The av time from onset of treatment to max regression of the primary tumor was 7.5 wk in Group A and 5 wk in Group B. The av time for max nodal regression was 6.4 wk in Group A and 5.2 wk in Group B. Actuarial disease-free survival (DFS) for both groups is presented. The 5-yr DFS was approx 10% in both groups and showed no difference by statistical analysis. Wt loss occurred in 11 patients in Group A (6%) and in 11 patients in Group B (4%). In Group A peak mucosal reactions (PMR) were reached in wk 3 and 4 in the majority of patients, while in Group B mucositis reached max in most patients within 2 wk. PMR lasted for 2 wk or less in most patients in both groups; mucosal reaction was somewhat prolonged in Group A. Duration of epidermitis was equivalent in both groups. (29 Refs)

31. DOES PREOPERATIVE IRRADIATION INCREASE THE RATE OF SURGICAL COMPLICATIONS IN CARCINOMA OF THE HEAD AND NECK? A RADIATION THERAPY ONCOLOGY GROUP REPORT.

Marcial VA, Gelber R, Kramer S, Snow JB, Davis LW, Vallecillo LA
Radiation Oncology Div., Center for Energy and Environmment Res., Caparra Heights Station, San Juan, Puerto Rico
Cancer; 49(6):1297-1301 1982

This is a comparison of the rate of surgical complications in a group of patients with advanced but operable carcinoma of the head and neck who underwent surgery after preoperative radiotherapy (5,000 rad in 5 wk, 200 rad fractions, directed to the primary tumor area and neck) versus another group operated without prior irradiation. Both groups of patients formed part of a randomized prospective multiinstitutional trial of the Radiation Therapy Oncology Group (73-03). Of 229 patients who had planned operations, 88 (38%) developed some degree of surgical complications, and in 28 (12%) the complications were rated as severe. The most frequently reported complications were delayed healing and fistula formation each occurring in approx one-fourth of each of the two treatment groups. Carotid blow-out occurred in 5% or less of the cases. No significant statistical difference between treatment groups was noted for the overall complication rate or specific type of surgical complications. A trend was noted towards more complications in the preoperative group for patients with lesions in the oropharynx and supraglottic larynx. However, an opposite trend towards more complications in the no prior irradiation group was observed among patients with lesions in the oral cavity and hypopharynx. Surgical mortality and postoperative hospital stay were not significantly different between treatment groups. We conclude that preoperative irradiation for carcinoma of the head and neck, with the stated dose, followed by surgery in 4-6 wk, doses not substantially increase the rate of overall or specific type of surgical complications, surgical mortality or hospital stay versus those patients operated without prior irradiation. (Author abstract) (22 Refs)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

32. THE MANAGEMENT OF STAGE I-II HODGKIN'S DISEASE WITH IRRADIATION ALONE OR COMBINED MODALITY THERAPY: THE STANFORD EXPERIENCE.

Hoppe RT, Coleman CN, Cox RS, Rosenberg SA, Kaplan HS
Dept. Radiology, Div. Radiation Therapy, Stanford Univ. Medical Center, Stanford, CA, 94305
Blood; 59(3):455-465 1982

At Stanford University, between 1968 and 1978, 230 patients with pathologic Stage I-II Hodgkin's disease were treated on prospective clinical trials with either irradiation alone or irradiation followed by six cycles of adjuvant combination chemotherapy. The actuarial survival at 10 yr was 84% for patients in either treatment group. Freedom from relapse at 10 yr was 77% among patients treated with irradiation alone and 84% after treatment with combined modality therapy [p(Gehan) = 0.09]. Freedom from second relapse at 10 yr was 89% and 94%, respectively [p(Gehan) = 0.56]. Several prognostic factors were evaluated in order to identify patients at high risk for relapse or with poor ultimate survival after initial treatment with irradiation alone. Systemic symptoms, histologic subtype, age, and limited extranodal involvement (E-lesions) did not affect the prognosis of patients and failed to identify patients whose survival could be improved by the routine use of combined modality therapy. Patients with large mediastinal masses (mediastinal mass ratio greater than or equal to 1/3) had a significantly poorer freedom from relapse when treated with irradiation alone than when treated initially with combined modality therapy [45% versus 81% at 10 yr, p(Gehan)=0.03]. The 10-yr survival of these patients, however, was not significantly different (84% versus 74%). The implications of these observations on the management of patients with early stage Hodgkin's disease are discussed. (Author abstract) (34 Refs)

33. HODGKIN'S DISEASE: TREATMENT WITH LOW DOSE RADIATION AND CHEMOTHERAPY.

Donaldson SS
Dept. Radiology, Div. Radiation Therapy, Stanford Univ. Sch. Medicine, Stanford, CA, 94305
Front Radiat Ther Oncol; 16:122-133 1982

After staging laparotomy and splenectomy, 48 children with Hodgkin's disease were given low-dose radiotherapy (RT: 1,500-2,500 rads according to bone age) and six cycles of MOPP therapy (nitrogen mustard, vincristine, procarbazine, and prednisone). Prednisone was omitted if mantle RT was given. Involved-field RT was given to Stage IA and IIA patients, total lymphoid RT (TLR) to Stage IB-IIIsA patients, and maintenance MOPP to Stage IV patients with bone marrow involvement (IVm). Booster RT (3,000-3,500 rads) was given to 159 nodal sites (not overlying the axial skeleton) which did not regress completely after RT and/or MOPP therapy. One of these nodal sites recurred after 18 mo and regressed after further RT; the patient remained recurrence-free (NER) thereafter. Two Stage IVm patients failed to respond to treatment and died within 6 mo. The other 46 patients were alive and 45/46 were continuously NER after a median of 3 yr. A few patients remained NER and showed no detectable developmental abnormalities after 10 yr of follow-up. The early side effects of treatment, including thyroid dysfunction in 4/24 children tested, were reversible and not severe. Shielding was applied to prevent RT damage to the heart, lungs, and gonads, apparently with success. The late effects of RT on bone growth were directly proportional to the dose and vol and inversely proportional to the patient's age at diagnosis. High-dose TLR led to a disproportionate change in sitting height as compared to standing height, especially in patients treated in early childhood (less than 6 yr old) or adolescence. The number of prepubertal boys was too small and the follow-up time too short to assess the effects of MOPP on testicular function. No second malignancies were noted during the follow-up period. (27 Refs)

34. PULMONARY RADIO-REACTION DEMONSTRATED BY X-RAY PICTURES. INTENSITY AND FREQUENCY OF ROENTGENO-MORPHOLOGICAL CHANGES OF THE LUNG AND MEDIASTINUM AFTER MANTLE-FIELD IRRADIATION WITH 4-MEV-PHOTONS AND SATELLITE TECHNIQUE.

Slanina J, Wannenmacher M, Bruggmoser G, Kruger HU
Abteilung Strahlentherapie, Universitatsklinik, Hugstetter Strasse 55, D-7800 Freiburg i. Br., W. Germany
Radiologe; 22(2):74-82 1982

X-ray radiographs of 119 patients (5-69 yr old, median 28 yr, 62 males, 57 females) with Hodgkin's disease who received mantle-field irradiation between 1974-1979 as primary radiotherapy were analyzed retrospectively. Mediastinal lymphomas of different sizes were diagnosed in 72 (68%) patients. Standardized mantle-field irradiation with a 4-mega volt linear accelerator, extended-field satellite technique, and tumor doses of 40-46 Gray Units were administered. Results for the extent, frequency, and intensity of pulmonary radio-reaction (PRR), and factors that influence the degree of PRR are presented. After a latency period of approx 12 wk, four phases in the development of PRR could be distinguished: Phase I is the beginning of pneumonitis (PN), Phase IIa florid PN (wk 15), Phase IIb transition between florid PN and stationary lung fibrosis (wk 20), and Phase IV stationary paramediastinal lung fibrosis (wk 34). Only 14 patients (11.8%) had no characteristic changes after mantle-field irradiation. Changes in the apex of lung were observed in 78 patients (65.5%) and in 7 patients (5.9%) were observed changes in the vicinity of axilla. Patients with mediastinal lymphomas had significantly more severe radio-reactions (57%) comparing to those without mediastinal involvement (25%). Changes in peripheral parenchymal and mediastinal shadows after beginning of shrinkage (Phase IIb) were recurrences. (17 Refs) (In GER)

35. ROLE OF COMBINED-MODALITY THERAPY IN THE CURATIVE MANAGEMENT OF ADVANCED-STAGE 'FAVORABLE' NON-HODGKIN'S LYMPHOMAS.

Kinsella TJ
Radiation Oncology Branch, Clinical Oncology Program, Div. Cancer Treatment, NCI, Building 10, Room B3B38, Bethesda, MD, 20205
Cancer Treat Rep; 66(3):421-425 1982

Management of advanced stages of 'favorable' non-Hodgkin's lymphomas (NHL) is reviewed. NHL is characterized primarily by involvement of lymph nodes. Wide-field, high-dose radiotherapy (RT) has produced modest improvement in NHL. Some studies indicate that diffuse histiocytic lymphoma (DHL) in advanced stages can frequently be cured by combination chemotherapy (CCT). The 'favorable' types of NHL, nodular lymphocytic, poorly differentiated (NLPD), nodular mixed (NM), and diffuse lymphocytic, well differentiated (DLWD), show poor curability by available therapies. Current modes of treatment include initially deferred treatment, single-agent chemotherapy, (SACT), conventional high-dose RT, total-body RT (TBI), and combined modality therapy (CMT). Data for comparison of modalities is incomplete, preventing conclusive statements of effectiveness. Initially deferred treatment assumes that 'favorable' NHL is incurable by available methods. Differences in response rates and overall survival using SACT and CCT are not clear. RT is limited by the usual requirement of prolonged treatment of bulky lymph node areas and the possibility of disease progression in unirradiated areas. Two studies indicate that high-dose, total lymphoid irradiation may be effective against Stage III nodular lymphoma. TBI apparently is of only palliative value. CMT may provide the best chance of curative treatment of 'favorable' NHL, since CCT and RT are not cross-reactive, and since recurrences after RT follow different patterns from those after CCT. Induction of complete CCT, followed by RT and then more CCT is suggested. (21 Refs)

36. TREATMENT OF MYCOSIS FUNGOIDES. TOTAL-SKIN ELECTRON-BEAM IRRADIATION VS TOPICAL MECHLORETHAMINE THERAPY.

Hamminga B, Noordijk EM, Van Vloten WA
Dept. Dermatology, Univ. Hosp., Rijnsburgerweg 10, 2333AA Leiden, The Netherlands
Arch Dermatol; 118(3):150-153 1982

Of 42 patients who had mycosis fungoides (MF) confined to the skin with or without dermatopathic lymphadenopathy, 21 were treated with topically applied mechlorethamine hydrochloride and 21 with total-skin electron-beam irradiation. The results of both therapeutic modalities are compared. We conclude that in the early stage of the disease, both forms of treatment are equally effective. In the later stages of MF, in the absence of lymph node or other systemic involvement, electron-beam irradiation seems to be superior in inducing an initial complete remission. However, because of the large number of patients who have a relapse after this therapy, it should be followed by topical mechlorethamine therapy. (Author abstract) (14 Refs)

37. WHOLE BONE MARROW IRRADIATION FOR THE TREATMENT OF MULTIPLE MYELOMA.

Coleman M, Saletan S, Wolf D, Nisce L, Wasser J, McIntyre OR, Tulloh M
Oncology Section, Div. Hematology-Oncology, Dept. Medicine, New York Hosp.-Cornell Medical Center, 525 East 68th St., New York, NY, 10021
Cancer; 49(7):1328-1333 1982

Nine patients with multiple myeloma were treated with whole bone marrow irradiation. Six had heavily pretreated disease refractory to chemotherapy. Three had stable disease lightly pretreated by chemotherapy. A modification of the 'three and two' total nodal radiation technique was employed. Although varying and often severe treatment related cytopenia occurred, infectious complications, clinical bleeding, and non-hematologic complications were minimal. Five of nine patients showed a decrease in monoclonal protein components, and one showed an increase during treatment. These preliminary results indicate that a reduction of tumor cell burden may occur in patients following whole bone marrow irradiation and that the technique is feasible. Whole bone marrow irradiation combined with chemotherapy represents a new conceptual therapeutic approach for multiple myeloma. (Author abstract) (15 Refs)

MUSCULOSKELETAL NEOPLASMS

38. FIFTEEN YEAR RADIOTHERAPY EXPERIENCE WITH CHONDROSARCOMA OF BONE.

McNaney D, Lindberg RD, Ayala AG, Barkley HT, Hussey DH
(c/o Lindberg) Div. Radiotherapy, Univ. Texas Anderson Hosp., 6723 Bertner Ave., Houston, TX, 77030
Int J Radiat Oncol Biol Phys; 8(2):187-190 1982

Effects of radiotherapy (RT) alone or in combination with other modalities were analyzed retrospectively in 20 patients (9 men, 11 women, 20-74 yr old) with chondrosarcoma of bone treated between 1961-1976. Thirteen tumors occurred in pelvic bones, 4 in vertebrae, 2 in distal femur, and 1 in maxillary antrum. RT consisted of supervoltage RT and/or neutrons. Eleven patients received RT alone, 3 patients received postoperative RT following less than radical local excision, 3 patients received RT with chemotherapy (CT) but without surgery, and 3 patients received RT for tumor recurrent after surgery. Results are presented; time intervals in mo were measured from the first day of RT. Typical tumor doses ranged from 4,000 to 7,000 rad at 1,000 rad/wk using parallel-opposed fields. The overall survival for RT alone is 54% at a median of 30 mo. CT and immunotherapy (cyclophosphamide, vincristine, adriamycin, dimethyl triazene imidazole carboxamide, chondrosarcoma lysates, and BCG scarification) were given after RT to a patients who was alive after 52 mo. Fifty-five percent of the patients treated for cure showed no evidence of progressive local disease at an av time of 38 mo. Two additional patients were salvaged after RT failure, increasing the overall survival rate to 65%. Severe complications were observed in five patients; three patients developed foot drop, and surgery was performed in other two revealing viable tumor in both cases. (7 Refs)

39. THE GROWTH RATE OF BONE SARCOMAS AND SURVIVAL AFTER RADIOTHERAPY WITH TOURNIQUET-INDUCED HYPOXIA: A CLINICAL STUDY.

Balmukhanov SB, Turdugulov I, Karibjanova Z, Revesz L
(c/o Revesz) Dept. Tumor Biology II, Karolinska Inst., 104 01 Stockholm, Sweden
Cancer; 49(8):1597-1604 1982

The volume doubling time of primary bone sarcomas and lung metastases was determined by measurements made on serial radiographs. For the primary tumors, the volume doubling times were log-normally distributed and varied in the range of 20-200 days with a mean around 50 days. The volume doubling times of the metastases also showed a log-normal distribution in the range of 10-100 days, but with a mean twice as short as that of the primaries. Radiation therapy was given with three-four doses of 20-25 Gy to the tumors that, together with the surrounding normal tissues, had been made hypoxic by the application of a tourniquet. Amputations were not performed unless required eventually by some serious late radiation dam age, such as grave functional deficiency, and/or painful fibrosis and ankyloses. In no case did microscopic examination of the amputated tissues reveal the persistance of any viable, neoplastic cells. The 5-yr survival of a total of 69 patients was 26%. Survival expectancy was found to be closely related to the volume doubling time of the tumors, as was the incidence of the metastases. The data stress the importance of volume doubling time as a predictive factor and indicate, furthermore, that treatment with a few massive radiation doses in combination with tourniquet-induced hypoxia is effective in local control of bone sarcomas. The severe late reaction of the normal tissues to the treatment will, however, require amputations in most of the 5-yr survivors. (Author abstract) (28 Refs)

40. RADIATION THERAPY TECHNIQUE IN SOFT TISSUE SARCOMAS OF THE EXTREMITY: POLICIES OF TREATMENT AT THE NATIONAL CANCER INSTITUTE.

Tepper J, Rosenberg SA, Glatstein E
(c/o Glatstein) Radiation Oncology Branch, Div. Cancer Treatment, NCI, Bethesda, MD, 20205
Int J Radiat Oncol Biol Phys; 8(2):263-273 1982

The rationale and technique of radiation therapy (RT) in adult soft tissue sarcomas (STS) of the extremities as practiced at the National Cancer Institute is discussed. Seventy-five patients with extremity lesions have been treated for local control with conservative surgery and RT between 1975 and 1980. Biology of STS, histological and surgical considerations, radiation technique (shrinking field technique, field shaping, field arrangement, immobilization, beam parameters, gonadal shielding, gapping techniques), and physical therapy are described. Although details of treatment vary greatly depending on the discussed parameters, a number of technical principles maximize the likelihood of local tumor control and of a good functional result. The four major anatomical regions affected by STS are the thigh, leg and foot, arm, and forearm and hand. The thigh is the most difficult in which to attain a high level of local control and the most likely to suffer morbidity; it is also the site with the highest likelihood to develop STS. Involvement of physical therapy in the care of the patient as early in the course of their disease, and ideally before their surgical procedure, is extremely important. This is essential for maintaining good long term function of the extremity. For patients with STS of the extremities the positioning of the patient, field arrangement, and beam shaping must be highly individualized to obtain optimal treatment results. (15 Refs)

41. IS THE MALIGNANT MELANOMA REALLY RADIOTHERAPY-RESISTANT?.

Storck H
Mittelbergsteig 7b, CH-8044 Zurich, Switzerland
Hautarzt; 33(1):5-11 1982

Radiation treatment of malignant melanoma (MM), results of MM radiation treatmen t since 1971, experiments with animal MM, MM radiosensitivity measured in in vitro experimental conditions, and possibilities of intensification of the radiation effect on MM are reviewed. The 5-yr survival rate from a collective study for 1,749 patients with MM Stage I is 67% for a single irradiation, 50% after surgery, 66% after radiation therapy and surgery, and 45% after radiation treatment following surgery. Difficulties in evaluation of MM treatment, with or without statistical interpretation, are due to the fact that single dose irradiation and fractionated irradiation are comparable only partially in their efficacy according to the duration and dosage of the fractions. The clinical radiosensitivity of human MM can be compared with the experimental hamster or mice melanoma, or with the sensitivity of cultured melanoma cells. Clinical experience, animal experiments, and culturing procedures revealed no evidence concerning the radiotherapy-resistance of MM. Application of the time-dosage-fraction (TDF) factors according to Orton and Ellis enables the comparison of biological effects for different TDF schedules. Electroaffine sensitizers, fast electrons, or neutrons with high linear energy transfer and small oxygen enhancement ratio could increase the efficiency of MM radiotherapy. (43 Refs) (In GER)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

42. THE ROLE OF RADIATION THERAPY FOR CARCINOMA OF THE LUNG.

Cox JD
Radiation Therapy, Medical Coll. Wisconsin, 8700 West Wisconsin Ave., Milwaukee, WI, 53226
Yale J Biol Med; 54(3):195-200 1981

A large proportion of patients with carcinoma of the lung may benefit from the use of radiation therapy. Operable patients have not been shown to benefit from preoperative irradiation, but postoperative irradiation has improved survival in those found to have involvement of hilar or mediastinal lymph nodes. Radiation therapy is the only potentially curative treatment for patients who are inoperable, but do not have distant metastasis. Control of the local tumor is very dependent upon dose-fractionation-time relationships. Patients who are relatively asymptomatic, ie, they have a high performance status, are curable if treated promptly with radiation therapy. Small cell carcinoma requires both radiation therapy and chemotherapy. The optimal method of combining the two modalities is yet to be determined, but prophylactic cranial irradiation is necessary to control microscopic metastases that are not affected by systemic chemotherapy, and thoracic irradiation is necessary to give the highest probability of control of the primary tumor. Prophylactic cranial irradiation has also been shown to reduce the frequency of brain metastasis in patients with squamous carcinoma, large cell carcinoma, and adenocarcinoma; it may become more important in these cell types when more effective chemotherapy is developed. (Author abstract) (26 Refs)

43. LONG-TERM RESULTS OF THE RADIOTHERAPY OF PERIPHERAL SQUAMOUS CELL LUNG CARCINOMA.

Zhakov IG
Res. Roentgenoradiological Inst., Moscow, USSR
Med Radiol (Mosk); 27(1):46-49 1982

Long-term results of radiotherapy were evaluated in 83 patients (77 men, 6 women; 91.5% were greater than 50 yr old) with inoperable peripheral squamous cell carcinoma of the lung. Total focal doses ranged from 4,000-5,000 rads in 5 patients, to 5,000-7,000 rads in 64, and greater than 7,000 rads in 13. Of 83 patients, 23 were in Stage T1-2N0M0, 57 were in Stage T1-2N1M0, and 4 were in Stage T3N0-1M0. The 1-, 2-, 3-, and 5-yr survival rates were 70%, 29%, 12%, and 3%, respectively. The av duration of survival was 16.6 mo. The 1-yr survival in the patients who showed complete or greater than 50% tumor regression was 92%, compared with 50% in the patients who showed less than 50% tumor regression. The long-term results of the radiotherapy did not depend upon the tumor size: 1-yr survival in the patients with tumors less than 5 cm and greater than 5 cm in diameter was 70% and 71%, respectively. These findings indicate that the patients with large (7-8 cm in diameter) peripheral carcinomas should undergo radical radiotherapy. (10 Refs) (In RUS)

44. LARGE FRACTION RADIOTHERAPY PLUS MISONIDAZOLE FOR TREATMENT OF ADVANCED LUNG CANCER: REPORT OF A PHASE I/II TRIAL.

Simpson JR, Perez CA, Phillips TL, Concannon JP, Carella RJ
Washington Univ. Medical Sch., Mallinkrodt Inst. Radiology, 4511 Forest Park Blvd., Suite 311, St. Louis, MO, 63108
Int J Radiat Oncol Biol Phys; 8(2):303-308 1982

Phase I/II trial with misonidazole (MN) was conducted with 51 patients (36-77 yr old, 84% of patients 50 yr old or older, 35 males, 16 females) with locally advanced non-oat cell carcinoma of the lung to test drug and radiation tolerance, and efficacy in terms of local tumor clearance and relapse patterns. Distribution by stage and node involvement and distribution of histological types are shown. Most of the patients had epidermoid carcinoma (53%). Tumor dose of 3,600 rad was administered to patients in fractions of 600 rad 2x/wk. Each radiation treatment was preceded by 2 g/square meter (m2) MN administered po 4 hr before. MN dose was reduced subsequently to 1.75 g/m2. Forty-nine of 51 patients entered were considered evaluable. Objective responses were seen in 67% of patients; 18% showed a complete response of their primary tumor, and 49% a partial response. Patients were analyzed for toxicity either as a result of MN or radiation. Neurotoxicity appeared clearly dose related. Radiation tolerance was analyzed by degree and frequency of normal tissue reactions within the irradiated volume. Eight patients (16%) suffered significant esophageal morbidity with this drug and radiation schema. The patterns of relapse following therapy are shown. Twenty-nine patients have had identifiable patterns of relapse to date with a minimum follow-up time of 9 mo. Thirty-one percent of patients failed initially with distant metastases. Bone metastases were most common, occurring in 21% of patients. The median survival time of patients was 9 mo, with 34% of the patients alive at 1 yr. (20 Refs)

45. HEMATOPORPHYRIN DERIVATIVE AND LASER PHOTORADIATION IN THE TREATMENT OF LUNG CANCER.

Hayata Y, Kato H, Konaka C, Ono J, Takizawa N
Dept. Surgery, Tokyo Medical Coll., Shinjuku, Tokyo, Japan
Chest; 81(3):269-277 1982

Photoradiation (PRT) for 10-40 min 48 hr or more after iv injection of 2.5-4.0 mg/kg of hematoporphyrin derivative (HpD), was used for treatment of 13 patients with lung cancer and 1 with severely atypical squamous metaplasia. HpD was activated by visible red light (630 nanometers, 90-400 milliW) from an argon dye laser beam delivered by a quartz fiber inserted through the instrumentation channel of a fiberoptic bronchoscope. Of the 14 patients (11 men, 3 women; 38-74 yr old), 5 had well-differentiated squamous cell carcinoma, 1 poorly differentiated squamous cell carcinoma, 3 large cell carcinoma, 2 adenocarcinoma, 2 small cell carcinoma, and 1 severely atypical squamous metaplasia. The single patient (male, 74 yr old) with early-stage lung cancer refused surgery but showed complete regression of tumor and remained disease-free at 16 mo. In the 12 other cases of lung cancer, 18 foci were treated; at least partial response was observed in all cases and complete response was observed at 3 foci. Significant remission occurred in eight foci and the bronchi obstructed by tumor were opened in 4/8 patients; symptoms of dyspnea were relieved in these patients. No significant improvement in survival of these patients was noted; however, all were advanced stage cases. In the single patient with atypical squamous metaplasia, metaplastic atypia completely disappeared. The major side effect was skin photosensitivity, controlled by staying in the shade for 2 wk in 10 of the 11 patients with sunburn. (15 Refs)

46. THE ROLE OF THORACIC AND CRANIAL IRRADIATION FOR SMALL CELL CARCINOMA OF THE LUNG.

Cox JD, Holoye PY, Byhardt RW, Libnoch JA, Komaki R, Hansen RM, Kun LE, Anderson T
Div. Radiation Oncology, Medical Coll. Wisconsin, 8700 West Wisconsin Ave., Milwaukee, WI, 53226
Int J Radiat Oncol Biol Phys; 8(2):191-196 1982

Untreated patients with small cell carcinoma of the lung entered into one of the four successive studies performed at The Medical College of Wisconsin. To evaluate the role of chest and brain radiation therapy, effectiveness of chemotherapy (CT) combinations, points of complete response, and median survival (MS) in relationship to survival beyond the median, a retrospective review of the patients was undertaken. Patients in Study I were treated with thoracic irradiation (TI) alone, and CT with progression. Study II randomized patients to TI (3,000 rad in 10 fractions/2 wk) plus either total body irradiation (TBI) 100 rad in 10 fractions/2 wk with CT at progression vs immediate CT. CT consisted of cyclophosphamide, doxorubicin, and vincristine (CAV) iv on days 1 and 8 every 4 wk for 8 cycles. Study III evaluated the effectiveness of high dose CAV and administered prophylactic cranial irradiation (PCI); TI was withheld unless recurrence occurred or the response was incomplete. In Study IV, methotrexate-leukovorin (ML) was administered with CAV; PCI was as in Study III. Patients who responded completely received TI. Summary and comparison of the treatments in the studies are presented. In Study

II, TBI was ineffective as systemic therapy. In spite of a much higher proportion of patients with limited disease, the MS in Study I was 22 wk vs 48 wk for Study II. Study III showed that the high dose CAV was well tolerated and possibly more effective than lower doses, but no difference in MS was observed. Addition of ML to CAV in Study IV showed no apparent benefit compared to Study II and III. Detailed analysis of the ability of the various regimens to effect local control is presented. (21 Refs)

INSTRUMENTATION AND TECHNOLOGY

47. PRECISE POSITIONING OF PATIENTS FOR RADIATION THERAPY.

Verhey LJ, Goitein M, McNulty P, Munzenrider JE, Suit HD
Dept. Radiation Medicine, Massachusetts General Hosp., Boston, MA, 02114
Int J Radiat Oncol Biol Phys; 8(2):289-294 1982

Immobilization techniques devised for the use with a fixed horizontal proton beam which is being used for large field fractionated radiation therapy (RT) are discussed. Pretreatment verification of patient position is routine for proton therapy (PT) patients. For each of the studies performed, the patient was initially set up with a laser beam to a mark on the cast or the table for approximative alignment. In planning patients for PT, treatment positions consistent with the fixed horizontal beam were used; supine, seated, decubitus, and a modified supine position for submental fields. The techniques of immobilization and the distributions of observed intratreatment movements (ITM) for these positions are described. A comparison of pre- and post-treatment radiographs provided a measure of patient ITM. Each day supine patients were initially aligned using laser side-lights projected onto marks placed on the patients' masks. The total motion of the patient volume required between this initial laser alignment and the final pretreatment position is shown. The mean required motion is 2.2 mm +-1.4 mm. This represents the error that could be expected if the patient were aligned each day using only the laser, as is typical with high energy x-ray treatments. Less error would result if skin marks, rather than mask marks were used for this alignment. Even in the absence of pretreatment radiographs, the careful use of secure immobilization devices would be expected to achieve improvements in tumor control probability. (10 Refs)

PRE-CLINICAL STUDIES

48. EFFECT OF IRRADIATION WITH FAST NEUTRONS OR X-RAYS ON THE INCIDENCE OF METASTASIS OF TRANSPLANTED B16 MELANOMA IN MICE.

Furuse T, Kasuga T
Lab. Radiation Pathology, Natl. Inst. Radiological Sciences, 9-1, Anagawa 4-chome, Chiba 260, Japan
Gan; 73(1):35-41 1982

The effects of x-rays and fast neutrons on the incidence of metastasis of B16 melanoma were investigated. Tumors were irradiated with the iso-effect dose (380 rad of 2 MeV fast neutrons, and 1,900 rad of 200 kV x-rays) for regression and regrowth of the tumor, and then were excised 3 days after irradiation. Metastasis was examined macroscopically and microscopically in all organs and tissues of mice when death occurred or after sacrifice of surviving mice at 130 days after tumor inoculation. Metastasis was found in 16 to 22% of tumor-bearing mice irrespective of whether or not the tumor had been irradiated before excision. Almost all the mice with metastasis developed pulmonary metastasis accompanied by lymphogenous spread to the thoracic lymph node. The overall incidence of metastasis in the x- or fast neutron-irradiated mice was slightly but not significantly higher than that in the control mice. Irradiation significantly enhanced the incidence of metastasis when the tumor volume was smaller than 200 mm3, but not when the tumor volume was larger than 200 mm3. The incidence of metastasis was significantly enhanced in mice with tumors invading the muscle. The metastasis-enhancing effect of irradiation was noticeably greater with x-irradiation than with fast neutron irradiation in mice with localized tumor of B16 melanoma, whereas in mice with invasive tumors the effects were similar. (Author abstract) (14 Refs)

49. HEMOPOIETIC ACTIVITY IN BONE MARROW CHIMERAS PREPARED WITH TOTAL LYMPHOID IRRADIATION (TLI).

Slavin S, Seidel HJ

Dept. Medicine A, Hadassah Univ. Hosp., Jerusalem, Israel

Exp Hematol; 10(2):206-216 1982

The hemopoietic status was examined in the blood, bone marrow and spleen of (BALB/c x C57BL/6)F1 hybrid mice treated with fractionated total lymphoid irradiation (TLI), with or without reconstitution with 30 x 10(6) syngeneic or parental C57BL/6 marrow cells. Colony forming units of pluripotent (CFUS) and granuloid committed stem cells (CFUC) were assayed in non-irradiated (femur) and irradiated bone marrow (humerus), and in spleen 9, 18, 73 and 109 days following TLI. Recovery of CFUS and CFUC was nearly complete as early as Day 18, and fully recovered on Day 73 in endogenously as well as exogenously (syngeneic and semiallogeneic) reconstituted mice. Mice transplanted with C57BL/6 bone marrow exhibited a 10-fold increase of CFUC in the spleen on Day 9 and maintained a 4-fold increase of CFUC on day 109, with normal CFUC in shielded, and near normal CFUC in irradiated bones. In contrast, the number of CFUS in the irradiated humerus was below 10% of all controls on Days 18-73 and below 30% on Day 109. Also, the number of CFUS in the spleen was very much reduced at Days 73-109. Unirradiated femora contained normal CFUC and only mildly depressed CFUS. The data suggest that repopulation of bone marrow is adequate although somewhat less efficient in irradiated as compared to shielded bones, whether or not exogenous marrow is transplanted. Semiallogeneic chimeras (C57BL/6 becoming F1) show low CFUS relative to high CFUC levels, particularly in irradiated organs (spleen and humerus). This may suggest an advantage, from a hemapoietic standpoint, to selective irradiation of lymphoid tissues, rather than the less selective wide fields that overlap marrow containing bones. (Author abstract) (22 Refs)

50. PROTECTIVE EFFECTS OF S-2-(3-AMINOPROPYLAMINO)ETHYLPHOSPHOROTHIOIC ACID AGAINST RADIATION DAMAGE OF NORMAL TISSUES AND A FIBROSARCOMA IN MICE.

Milas L, Hunter N, Reid BO, Thames HD
Dept. Experimental Radiotherapy, M.D. Anderson Hosp. and Tumor Inst., Houston, TX, 77030
Cancer Res; 42(5):1888-1897 1982

S-2-(3-Aminopropylamino)ethylphosphorothioic acid (WR-2721) was investigated for its protective effect against radiation-produced damage of jejunum, testis, lung, hair follicles, and a fibrosarcoma of C3Hf/Kam mice. Most of these tissues were radioprotected, and the degree of radioprotection depended on the dose of WR-2721 and the time interval between administration of WR-2721 and radiation treatment. WR-2721 increased resistance of jejunal epithelial cells and spermatogenic cells to single doses of gamma-rays by factors of 1.64 and 1.54, respectively. Protection against hair loss was less pronounced; the dose-modifying factor here was 1.24. The radiation-induced acute damage of the lung expressed by the increased formation of tumor nodules in the lung was not decreased by treatment of animals with WR-2721 before radiation. In contrast, WR-2721 augmented the radiation-induced enhancement of metastasis formation in the lung. WR-2721 protected fibrosarcoma micrometastases in the lung against therapeutic effect of radiation by a factor of 1.28. In contrast, this compound has no effect on the therapy of an 8-mm fibrosarcoma growing in the legs of mice. (Author abstract) (29 Refs)

51. DIFFERENTIAL EFFECT OF HYPERTHERMIA AND X-IRRADIATION ON REGROWTH RATE AND TUMOUR-BED EFFECT FOR A RAT SARCOMA.

Wheldon TE, Hingston EC
MRC Cyclotron Unit, Hammersmith Hosp., Du Cane Road, London W12 0HS, England
Br J Cancer; 45(2):265-271 1982

The regrowth rate of the rat sarcoma SSB1a was assessed, following treatment with either x-rays of hyperthermia. The growth rate of untreated tumors implanted in pre-irradiated or pre-heated normal tissue was also measured For treatments giving similar levels of tumor regrowth delay, the regrowth of irradiated tumors was markedly slower than that of untreated tumors, whilst the regrowth rate of tumors subjected to hyperthermia did not differ from that of untreated tumors. The growth rate of untreated tumors implanted in pre-irradiated skin was also slower than that of control tumors, though the growth-rate reduction was less dramatic than for regrowth following tumor irradiation in situ. Tumors implanted in pre-heated skin grew at the same rate as control tumors. Slower regrowth in situ after x-rays than after hyperthermia would produce a larger growth delay for x-rays than for hyperthermia, for equal levels of tumor-cell kill or probability of tumor sterilization. This effect could lead to a systematic underestimation of the efficacy of hyperthermia relative to x-rays, when efficacy is assessed by growth delay. (Author abstract) (23 Refs)

52. STUDIES ON FRACTIONATED HYPERTHERMIA IN EXPERIMENTAL ANIMAL SYSTEMS II. RESPONSE OF MURINE TUMORS TO TWO OR MORE DOSES.

Urano M, Rice LC, Montoya V

Dept. Radiation Medicine, Massachusetts General Hosp., Harvard Medical Sch., Boston, MA, 02114

Int J Radiat Oncol Biol Phys; 8(2):227-233 1982

Kinetics of thermal resistance (TR) and fractionated hyperthermia regimen were studied in murine tumors induced in 10-12 wk old C3Hf/Sed mice. Assay methods include tumor growth (TG) time analysis and determination of 50% tumor control dose (TCD50). TCD50 is a treatment time at elevated temperature to yield a tumor control in half the treated animals. A spontaneous mammary carcinoma (MCA) and a chemically-induced fibrosarcoma (FSa-I) were used. MCA was treated with equal dose fractions at 43.5 C with a time interval (Ti) between treatments of 1, 2, or 5 days; then TCD50 was determined. TCD50 increased with increasing overall treatment time. Results suggest that the true TCD50 values after fractionated treatment might have been greater than those obtained experimentally with a resultant decrease in the therapeutic ratio. The kinetics of TR was studied at 45.5 C to investigate the different therapeutic ratio between MCA and FSa-I. The effect of Ti between first dose (D1) and second dose on the development of TR was studied in MCA. The dose-response curves after 2 doses demonstrated a less steep slope compared to single dose-response curve, indicating that substantial TR developed following the first exposure to heat. Effect of the siz e of D1 on the development of TR was studied for MCA and FSa-I by TG time analysis. The magnitude of TR appeared more dramatic in MCA than in FSa-I, in that a difference in slopes between single and 2 dose-response curves was far greater for MCA than for FSa-I. (34 Refs)

☆ U. S. GOVERNMENT PRINTING OFFICE : 1982—361-847/123

AUTHOR INDEX WITH CITATION NUMBERS

Adomat H ... 27
Anderson T ... 46
Andine JP ... 23
Antich PP ... 3
Arcangeli G ... 1
Ashayeri E ... 12
Ayala AG ... 38
Balawajder I ... 3
Balmukhanov SB ... 39
Barkley HT ... 38
Betti O ... 6
Bloomer WD ... 21
Boland J ... 3
Bossi G ... 23
Bruggmoser G ... 34
Byhardt RW ... 46
Camel HM ... 25
Carella RJ ... 44
Carella RJ ... 7
Catterall M ... 13
Chang CC ... 29
Chang-Chien Y ... 29
Chen CC ... 29
Chen FW ... 29
Chung CK ... 24
Cohen AM ... 15
Coleman CN ... 32
Coleman M ... 37
Concannon JP ... 44
Cowchock S ... 10
Cox JD ... 42
Cox JD ... 46
Cox RS ... 32
Creton G ... 1
Cummings BJ ... 14
Cummings BJ ... 19
Cunningham DE ... 24
Danesi DT ... 1
Danoff BF ... 10
Davis KR ... 28
Davis LW ... 31
Dembo AJ ... 19
Donaldson SS ... 33
Eberhardt HJ ... 16
Ehrmann RL ... 21
Erlichman TC ... 14
Espinoza MC ... 12
Fine S ... 14
Fischer JJ ... 30
Fletcher GH ... 4
Furuse T ... 48
Gelber R ... 31
Glatstein E ... 40
Goitein M ... 28
Goitein M ... 47
Goldobenko GV ... 11
Goldson AL ... 12
Gospodarowicz M ... 19
Gunderson LL ... 15
Hackel W ... 16
Hamminga B ... 36
Hansen RM ... 46
Harwood AR ... 14
Hawkins NV ... 19
Hayata Y ... 45
Heidtman B ... 22
Herman JG ... 19
Hingston EC ... 51
Holoye PY ... 46
Hop WC ... 20
Hoppe RT ... 32
How SW ... 29
Huang SC ... 29
Hunter N ... 50
Hussey DH ... 38
Josephy PD ... 27
Kaplan HS ... 32
Karibjanova Z ... 39
Kasuga T ... 48
Kato H ... 45
Kavalli BK ... 8
Keane TJ ... 14
Keen CW ... 19
Kelly U ... 16
Kinsella TJ ... 35
Kleinman GM ... 9
Knapp RC ... 21
Koehler A ... 28
Komaki R ... 46
Konaka C ... 45
Kopelson G ... 9
Kramer S ... 10
Kramer S ... 31
Kruger HU ... 34
Kun LE ... 46
Liaw KY ... 29
Libnoch JA ... 46
Lifshitz S ... 26
Lindberg RD ... 38
Linggood R ... 28
Linggood RM ... 9
Marcial VA ... 31
Marquette C ... 10
Matsui T ... 7
Mauch P ... 21
McIntyre OR ... 37
McNaney D ... 38
McNulty P ... 47
Mewis L ... 5
Milas L ... 50
Mohiuddin M ... 17
Montague ED ... 4
Montoya V ... 52
Moorthy CR ... 12
Mortel R ... 24
Mulgrew L ... 10
Mulholland SG ... 17
Munzenrider J ... 28
Munzenrider JE ... 47
Nahhas W ... 24
Nardi GL ... 15
Nervi C ... 1
Newall J ... 7
Nibhanupudy JR ... 12
Nidiry JJ ... 12
Nisce L ... 37
Noordijk EM ... 36
Novikov AV ... 8
Ojemann RG ... 28
Ono J ... 45
Oswald MJ ... 4
Palcic B ... 27
Patanaphan V ... 22
Percarpio B ... 30
Perez CA ... 25
Perez CA ... 44
Phillips TL ... 44
Powlis WD ... 21
Prempree T ... 22
Prosnitz LR ... 2
Raatzsch H ... 16
Ransohoff J ... 7
Reboul F ... 23
Reboul G ... 23
Reddi RP ... 18
Reid BO ... 50
Revesz L ... 39
Rice LC ... 52
Rider WD ... 14
Rider WD ... 19
Rogulov VA ... 8
Rootman J ... 27
Rose CM ... 21
Rosenberg SA ... 32
Rosenberg SA ... 40
Roux VJ ... 12
Salcman M ... 7
Saletan S ... 37
Savage JE ... 26
Schell S ... 4
Schlienger M ... 6
Schorcht J ... 16
Scott RM ... 22
Seidel HJ ... 49
Sewchand W ... 22
Shipley WU ... 15
Simpson JR ... 44
Slanina J ... 34
Slavin S ... 49
Snow JB ... 31
Son YH ... 30
Spanos WJ ... 4
Storck H ... 41
Strietzel M ... 16
Strong GH ... 17
Stryker JA ... 24
Suit HD ... 28
Suit HD ... 47
Szenthe L ... 6
Szikla G ... 6
Takizawa N ... 45
Tapley ND ... 4
Taylor KA ... 26
Tepper J ... 40
Tewfik HH ... 26
Thames HD ... 50
Thomas GM ... 14
Thomas GM ... 19

Tulloh M 37
Turdugulov I 39
Tzen KY 29
Urano M 52
Vallecillo LA 31
Van Orden DE 26
Van Vloten WA 36
Van der Werf-Me 20
Verhey L 28
Verhey LJ 47
Voigtmann L 16
Volkov AA 8
Wannenmacher M 34
Warner OG 12
Wasser J 37
Weissberg JB 2
Weissberg JB 30
Wheldon TE 51
Whitley NO 22
Wolf D 37
Wood WC 15
Young SE 5
Zhakov IG 43

VIDEOTAPES

ON CURRENT TOPICS IN CANCER RESEARCH

A pilot project of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute

Three series are available . . .

THE RELATION OF CARCINOGEN ACTION ON DNA TO CELL TRANSFORMATION

PETER MAGEE Fels Research Institute	*Keynote Address*	#VK01 28 min.
JAMES K. SELKIRK Oak Ridge National Laboratories	*Metabolic Activation and Macromolecular Binding of Chemical Carcinogens*	#VK02 51 min.
PHILIP C. HANAWALT Stanford University	*Cellular Responses to Damaged DNA*	#VK03 54 min.
CHARLES HEIDELBERGER University of Southern California	*Mutagenesis and Oncogenic Transformation of Mouse Embryo Cells*	#VK04 54 min.
FRED RAPP Milton S. Hershey Medical Center	*The Interaction of Herpesviruses and Host Cells Leading to Latency or Transformation*	#VK05 52 min.
	Panel Discussion	#VK06 31 min.

MECHANISMS OF METASTASIS

ISAIAH FIDLER Frederick Cancer Research Center	*The Heterogeneous Nature of Cancer Metastasis and Implications for Therapy*	#VB01 47 min.
GEORGE POSTE Smith, Kline and French Laboratories	*Phenotypic Analysis of Metastatic Cell Populations*	#VB02 42 min.
LANCE LIOTTA National Cancer Institute	*Tumor Cell Invasion of Basement Membranes and Extracellular Matrices*	#VB03 33 min.
EVERETT SUGARBAKER Miami Cancer Institute	*Some Clinical Characteristics of Metastasis in Man*	#VB04 41 min.

AUTOMATED CYTOLOGY

Part One: Principles and Techniques	#VB05 56 min.
Part Two: Biological Applications	#VB06 52 min.

VIDEOTAPES ON CURRENT TOPICS IN CANCER RESEARCH are in the 3/4" U-matic format and can be played on video equipment which accepts the NTSC standard (the standard for videotapes produced in the U.S.). The two Automated Cytology tapes (#VB05 and #VB06) are also available in the PAL format.

The videotapes are available on a loan basis. If you would like to schedule viewing for your group, or for more information, please write to:

Videotape Coordinator
ICRDB Program
Westwood Building, Room 10A18
Bethesda, MD 20205

Please specify three choices for viewing dates, and the tapes desired.

CANCER INFORMATION? CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · **JUST MENTION OUR NAME**

Mention CANCERLINE to your librarian and the world's foremost collection of cancer information is at your disposal. With the help of this computerized data system, you can obtain information on the following:

Cancer Literature

The literature date base, **CANCERLIT**, allows you to survey more than 3,000 biomedical journals for information on your topic of interest. Your search will also alert you to meeting proceedings, monographs, and books published in that area. Informative abstracts averaging 200 words are provided with each citation;

Current Cancer Research

The data base **CANCERPROJ** allows you to retrieve descriptions of current work in any cancer research area. The descriptions, which state research objective, methodology, and experimental results, are supplied for projects underway in 77 countries around the world.

Cancer Therapy Protocols

The **CLINPROT** section of CANCERLINE is designed primarily for clinicians. It provides detailed summaries of currently active experimental protocols for any cancer site, agent, or type.

Ask your biomedical librarian about CANCERLINE.
CANCERLINE is sponsored by the International Cancer Research Data Bank—a program of the National Cancer Institute.

CANCERLINE

Keep Up with the Cancer Literature

Each Month
You Can Receive Abstracts Covering Your Specialty Area

- This convenient service — called Auto SDI* — is as near as your nearest biomedical library. Discuss your research interests with the librarian who will design an appropriate search strategy.
- Abstracts of the latest published literature are searched automatically each month and those related to your interests are delivered to you on a regular basis.
- The abstracts you receive are selected from more than 4,000 monthly entries made into CANCERLIT — the extensive cancer literature data base of the National Cancer Institute.

Talk With Your Librarian About the Auto SDI Service TODAY.

---

*Auto SDI stands for Automatic Selective Dissemination of Information. It is a service provided to you, at minimal cost, by the International Cancer Research Data Bank (ICRDB) — a part of the National Cancer Institute.

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT 15/82/09

NCI/ICRDB/CT15 82/09
PB82-939009

NEWARK PUBLIC LIBRARY
OCT 20 198
U. S. GOVT. PUBS.
DEPOSITORY 376

INTERNATIONAL CANCER RESEARCH DATA BANK

ICRDB CANCERGRAM

CLINICAL TREATMENT OF CANCER

Radiation Therapy

SERIES CT15 No. 82/09

SEPTEMBER, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy *If this Cancergram is useful and valuable, please send your comments to the CIDAC address below, since future editions depend on user satisfaction and user needs:*

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr., M.D.

PDQ (PROTOCOL DATA QUERY) - A NEW ONLINE CANCER DATABASE WILL BE AVAILABLE THIS FALL! PDQ LISTS THERAPY PROTOCOLS PLUS ADDRESSES AND PHONE NUMBERS OF CLINICAL INVESTIGATORS. CONTACT ICRDB FOR DETAILS.

In this issue:

- BREAST NEOPLASMS 1
- CENTRAL NERVOUS SYSTEM NEOPLASMS 2-4
- DIGESTIVE NEOPLASMS 5-7
- GENITOURINARY NEOPLASMS 8-13
- GYNECOLOGIC NEOPLASMS 14-15
- HEAD AND NECK NEOPLASMS 16-22
- HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS 23-26
- MUSCULOSKELETAL NEOPLASMS 27-29
- RESPIRATORY AND CARDIOVASCULAR NEOPLASMS 30-32
- INSTRUMENTATION AND TECHNOLOGY 33-37
- PRE-CLINICAL STUDIES 38-40

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20.3173/2:

BREAST NEOPLASMS

1. EFFECTS OF SINGLE LARGE-DOSE PREOPERATIVE RADIOTHERAPY ON ADVANCED BREAST CANCER.

Mikuriya S, Konoeda K, Mikami A, Hatano K, Fujii K, Koga I, Kimura T, Adachi H, Kamimura S, Sagara M, Kato T, Oonishi M, Ooami H, Hidaka Y, Kudo T, Matsumura K
Div. Radiology, Natl. Medical Center Hosp., Japan
Nippon Gan Chiryo Gakkai Shi; 16(7):1466-1480 1981

Relatively advanced breast cancer was treated with single large-dose preoperative radiotherapy in 26 patients (29-84 yr old). The radiotherapy was administered with the aid of a betatron (6-20 million electron volt) apparatus and consisted of a single 30 Gray (Gy) dose in eight of the patients and of fractionated doses from 1-20 Gy (2-3x/2wk; total, 23-38 Gy) in the remaining patients. Three cases were Stage II, 18 were Stage III, 4 were Stage IV, and 1 was metastatic. Following the radiotherapy, 20/26 cases were resectable. Histopathological examination of the resected specimens indicated that marked cellular infiltrations of primary tumor nests occurred in 14/24 cases; this suggested a direct relationship between the irradiation and immune response. Abscopal effects were observed macroscopically in 7/20 cases and microscopically in 10/20. Enhanced immune response after the irradiation, was also shown in four kinds of skin tests for cellular immunity, although slight decreases were observed in rates of PHA-induced blastoid formation of lymphocytes in vitro and in numbers of peripheral lymphocytes and T cells. Single large-dose preoperative radiotherapy was thought to have positive effects on the host immune reaction and survival of the advanced breast cancer patients. (28 Refs) (In JPN)

CENTRAL NERVOUS SYSTEM NEOPLASMS

2. A COAXIAL CATHETER SYSTEM FOR AFTERLOADING RADIOACTIVE SOURCES FOR THE INTERSTITIAL IRRADIATION OF BRAIN TUMORS.

Gutin PH, Dormandy RH
Dept. Neurological Surgery, Editorial Office, Univ. California Sch. Medicine, 350 Parnassus Ave., Suite 807, San Francisco, CA, 94143
J Neurosurg; 56(5):734-735 1982

A coaxial two-catheter system that facilitates accurate stereotaxic placement of radioactive sources for the interstitial irradiation of brain tumors is described. (Author abstract) (3 Refs)

3. HUMAN CENTRAL NERVOUS SYSTEM DISTRIBUTION OF CIS-DIAMMINEDICHLOROPLATINUM AND USE AS A RADIOSENSITIZER IN MALIGNANT BRAIN TUMORS.

Stewart DJ, Leavens M, Maor M, Feun L, Luna M, Bonura J, Caprioli R, Loo TL, Benjamin RS
(c/o Benjamin) Dept. Developmental Therapeutics, M. D. Anderson Hosp., Houston, TX, 77030
Cancer Res; 42(6):2474-2479 1982

The human central nervous system pharmacology of cis-diamminedichloroplatinum (CDDP) was studied, and trials were initiated of CDDP as a radiosensitizer in the treatment of malignant primary brain tumors. Samples were assayed for platinum using x-ray-dispersive fluorescence spectrometry. Platinum concentrations in edematous brain tissue adjacent to tumor were generally lower than platinum concentrations in intracerebral tumor. Brain platinum concentration decreased with increasing distance from intracerebral tumor. The extent to which central nervous system pharmacology of an antineoplastic agent affects its activity against intracerebral neoplasms remains unclear. Fifteen patients with malignant brain tumors received CDDP, 40 mg/sq m/wk iv during cranial irradiation, and some received 105 to 120 mg/sq m every 3 wk after cranial irradiation. Close follow-up was necessary, and some weekly treatments needed to be omitted in individual patients. During the weekly CDDP, gastrointestinal, scalp, and renal toxicities and hypomagnesemia were noted but were tolerable. Only one patient developed myelosuppression. Ototoxicity may have been enhanced. Postirradiation CDDP, 105 to 120 mg/sq m every 3 wk, caused substantially more gastrointestinal toxicity and may have caused central nervous system toxicity in four patients, although other factors probably contributed. It is too early to evaluate effect on survival. (26 Refs)

4. MENINGIOMA AS A SEQUEL OF RADIOTHERAPY FOR PITUITARY ADENOMA.

Spallone A
Istituto di Neurochirurgia, Universita di Roma, Viale dell' Universita 30, 00185 Roma, Italy
Neurochirurgia (Stuttg); 25(2):68-72 1982

Meningioma was found in two patients after radiotherapy for pituitary adenoma. A 38-yr-old woman presented with decreasing vision and obesity. Chromophobic adenoma had been surgically treated 9 yr prior to presentation. Radiotherapy had been given postoperatively (2,500 R) and after recurrence 7 yr later (4,100 R in 18 fractions over 3 wk). Clinical examination showed increased body hair, severe visual impairment, bilateral optic atrophy, and temporal hemianopia. A small prefrontal lobectomy was followed by removal of a large, recurrent chromophobic adenoma arising from the sella. Following surgery symptoms improved. The patient was hospitalized 11 yr later for auditory hallucinations. Two yr later the patient presented with frontal headache, visual deterioration, and a tremor in the left hand. A fibroblastic meningioma was completely removed from the sella. A 35-yr-old woman presented with oligomenorrhea and acromegaly of 13 yr duration. Radiotherapy (4,000 R over 4 wk followed after 3 mo by 2,200 Rad over 2 wk) 12 yr prior to presentation had temporarily relieved the symptoms. X-rays showed an enlarged sella with erosion of the floor. An eosinophilic adenoma was removed by transsphenoidal microsurgery. The patient returned the following yr with headache and blurred vision. A fibroblastic meningioma was removed from the floor of the anterior fossa. Review of 192 cases of pituitary adenoma suggests a causal relationship between radiotherapy and subsequent development of meningioma. (59 Refs)

DIGESTIVE NEOPLASMS

5. THERAPY TRIAL WITH TELECOBALT IRRADIATION OF PATIENTS WITH ESOPHAGEAL CANCER.

Morysinski T, Starzynska T, Danczak-Ginalska Z
Zaklad Teleradioterapii, Instytut Onkologii, Warsaw, Poland
Pol Przegl Chir; (Suppl):43-45 1981

Forty-one patient with squamous epithelial carcinoma (34), solid carcinoma (5) and anaplastic carcinoma (2) of the esophagus were subjected to radical telecobalt radiotherapy (total dose 5,000-7,000 rads in 35 days). Radiologically manifest local tumor regression was achieved in 95% of all patients. The av survival of the 41 patients was 19.7 mo. The 2-, 3-and 4-yr survival rates were 22.3%, 17% and 14.5%, respectively. Patients with tumors smaller than 5 cm and without distant metastases, and those irradiated with 6,000 rads, were found to benefit most from the radiotherapy. (no Refs) (In POL)

6. INTERSTITIAL PULMONARY INFILTRATE FOLLOWING COMBINED THERAPY FOR ESOPHAGEAL CARCINOMA.

Dunnick NR, Schwade JG, Martin SE, Johnston MR, Glatstein E
NIH, Building 10, Room BIN257, Bethesda, MD, 20205
Chest; 81(4):453-456 1982

Seven men (61-65 years old) with squamous cell carcinoma of the esophagus received 4,000 rad irradiation therapy in 10 equal doses over 5 weeks followed in 14-41 days by esophagogastrectomy. At operation lymph node metastases were discovered in six patients. Four of the patients developed progressive diffuse interstitial pulmonary infiltrates, three within 24 hours and one within 8 days of surgery. No pleural effusions, Kerley B lines, or infectious agent were found. There was no correlation of location of the pulmonary changes with the radiation ports. These four patients died of pulmonary insufficiency 18-50 days postoperation. Autopsy revealed widespread dilatation of interstitial and subpleural lymphatics, extensive organizing alveolitis, and interstitial fibrosis. The three remaining patients included two with no visible tumor at operation. One of these two was still in remission 20 months after presentation, and the other died with local recurrence 17 months after presentation. The third patient, with metastasis at operation, died with local recurrence at 11 months. None of 24 other patients receiving radiation therapy up to 4,800 rad in the same fashion with no surgery developed such pulmonary complications. (12 Refs)

7. THERAPY AND PROGNOSIS OF GASTRIC SARCOMA.

von Bulow M, Dzihniszewski G
Chirurgische Universitatsklinik, Langenbeckstrasse 1, D-6500 Mainz, W. Germany
Langenbecks Arch Chir; 356(2):129-140 1982

The treatment of 20 patients with gastric sarcomas and of 31 patients with gastric lymphomas is described. Undifferentiated sarcomas of the lowest level of tissue maturation (spindle-cell sarcomas) were diagnosed in 10/20 patients, differentiated sarcomas in 10 (liposarcoma in 1, neurogenic sarcoma in 5 and leiomyosarcoma in 4). Billroth's II resection was performed in five patients in Stage I and in three patients in Stage II, gastrectomy in five patients Stage II, wedge resection in one patient in Stage I, and exploratory laparotomy in six patients in Stage IV. The patients with sarcomas of low level of maturity were usually subjected to postoperative cytostatic therapy, and three patients were irradiated after surgery. Three patients in Stage Ib have been alive for more than 8 yr, while the 5-yr survival rate was lower than 50% in Stage Ic. The 5-yr survival rate was 0% in Stages II and III. Twenty-three of the 31 patients with malignant lymphomas were followed up. Seven of the 23 patients in Stages I and II were subjected to tumor resection with radiotherapy and chemotherapy; the mean survival time was 58 mo. Five other patients, subjected to tumor resection only, had an av survival time of 18 mo. the combination of chemotherapy and radiotherapy was also found to be definitely advantageous in the patients in Stages III and IV, in whom the diagnosis of lymphoma was usually established only postoperatively. (19 Refs) (In GER)

GENITOURINARY NEOPLASMS

8. PRIMARY TUMORS OF THE RENAL PELVIS AND URETER: VALUE OF POSTOPERATIVE EXTERNAL RADIOTHERAPY.

Nguyen TD, Franck D, Bugat R, Douchez J, Combes PF
Service de Radiotherapie, Centre Claudius Regnaud, 11, rue Piquemil, 31052 Toulouse Cedex, France
Sem Hop Paris; 58(11):661-664 1982

Twenty-four observations of primary malignant tumors of the renal pelvis and ureter derived from epithelial cells were included in this study. Thirteen patients were treated by radiotherapy and surgery. In 11 patients, surgical excision was the only treatment. Although patients were not randomized there was no significant difference between the two groups concerning the following parameters: age distribution, sex ratio, stage of disease, histological grade, surgical procedure. The morbidity related to external radiotherapy (megavoltage technique, delivering 45 grays in 5 wk) was low: only one patient developed retroperitoneal fibrosis. No patient was lost to follow-up. Local recurrence occurred in 54.5% of the patients treated by surgery alone, against 15.5% after combined radio-surgical therapy. The overall 3-yr survival rate was 35% without any significant difference between the two groups. The authors advocate postoperative high-voltage radiotherapy for non-disseminated carcinoma of the renal pelvis and ureter. (Author abstract) (9 Refs) (In FRE)

9. HYPERTHERMIC PERFUSION OF THE DISTENDED URINARY BLADDER IN THE MANAGEMENT OF RECURRENT TRANSITIONAL CELL CARCINOMA. A REVIEW AFTER 6 YEARS.

Newsam JE, Law HT
Dept. Urology, Western General Hosp., Edinburgh EH4 2XU, Scotland
Br J Urol; 54(1):64-65 1982

Results of treating 12 patients with intractable postradiotherapy bladder bleeding due to tumor (11) or telangiectasia (1) with hyperthermic perfusion are described. A new device for the application of local hyperthermia to body cavities is described for the treatment of patients who have intractable hematuria following radical radiotherapy for the management of recurrent transitional cell carcinomas and for patients with multiple T1 tumors unsuitable for diathermy and unresponsive to epodyl. (1 Ref)

10. PRELIMINARY OBSERVATIONS ON THE RESULTS OF COMBINED 125IODINE SEED IMPLANTATION AND EXTERNAL IRRADIATION FOR CARCINOMA OF THE PROSTATE.

Ross G, Borkon WD, Landry LJ, Edwards FM, Weinstein SH, Abadir R
Dept. Surgery, Div. Urology, Univ. Missouri Sch. Medicine, Columbia, MO
J Urol; 127(4):699-701 1982

Fifty-seven patients with localized carcinoma of the prostate were treated with pelvic lymphadenectomy and a reduced 125iodine implant dosage, supplemented by a moderate dose of external beam radiotherapy to the whole pelvis delivered 4-6 wk later. The incidence of pelvic nodal metastases was 28% and the operative morbidity was 15%. Late radiation sequelae developed in 18 patients, including 15 patients with radiation proctitis (29%), among whom 2 (4.6%) suffered rectal ulceration and required diverting colostomy. Followup has been 2 yr or longer (median 33 mo) in 26 patients, of whom 22 (85%) are free of disease. Three patients are living with osseous metastases or local disease and there has been one death of prostatic carcinoma, for an absolute 2-yr survival rate of 95%. Of the seven patients with poorly differentiated tumor and of the eight patients with positive pelvic lymph nodes 5 and 6, respectively, remain free of disease after a minimum 2-yr followup. Potency has been lost in 20% and reduced significantly in 30% of the patients followed 18 mo or longer. Prostatic biopsies on 28 asymptomatic patients 12-30 mo after completion of therapy showed no tumor in 21 (75%). (Author abstract) (9 Refs)

11. RADIOLOGIC THERAPY OF THE TESTICULAR SEMINOMA.

Heider KM, Salewski D
Radiologische Klinik, Martin-Luther-Universitat Halle - Wittenberg, Dryanderstrasse 4-7, DDR - 4020 Halle (Saale), E. Germany
Radiobiol Radiother (Berl); 23(1):7-14 1982

One hundred thirty-one patients with histologically diagnosed seminoma were divided in two groups after radical semicastration. Group A consisted of 58 patients who were administered radiotherapy (RT) to bilateral aortic, inguinal and iliac lymph nodes. Group B consisted of 73 patients who were administered RT as in Group A, when they were in Stage I and additional RT to mediastinum and to the left supraclavicular region when they were in Stage II and Stage III. The seminoma was located in the right testicle in 65 of the patients, in the left testicle in 64, and retroperitoneal in 2. Time span between symptoms and diagnosis was 7.6 mo, and between surgery and RT 1.8 mo. Of the 131 patients, 77 were in Stage I (No M0), 25 in Stage II (N1-3 M0), and 29 were in Stage III (N4 M0) and they were divided equally between Group A and Group B. After 3 yr, 79% of the patients in Group A were free of relapse, and 99% in Group B. (14 Refs) (In GER)

12. TESTICULAR SEMINOMA: A REVIEW OF 30 CASES.

Laverdiere J
Centre d'onco-radiologie, Hotel-Dieu de Quebec, Pavillon Carlton-Auger, Quebec, Canada
Union Med Can; 110(10):905-906 1981

A retrospective analysis of 30 patients (20-58 yr old) with testicular seminomas (1 spermatocytic, 4 anaplastic, and 25 classic) treated with radiotherapy is presented. Lymphatic metastasis, particularly involving the para-aortic lymph nodes, and secondarily the iliac, supra-clavicular, and mediastinal lymph nodes, are most common. Diagnostic technics include lymphography, pyelography, tomography, and evaluation of diagnostic markers (alpha fetoproteins and beta subunit of human chorionic gonadotropin). Patients were classified as Stage I (18 patients), II (8), or III (4). Stage I patients were treated with cobalt60 radiotherapy (2,500 rad in 3 wk) to the para-aortic region. In Stage II patients, extra radiation (1,000-1,500 rads) also was delivered to known lymphatic masses along with prophylactic mediastinal and sub-clavicular radiotherapy (2,500 in 3 wk). Stage III treatment varied. The overall 3-and 5-yr recurrence-free survival rates for the 30 patients was 85% and 84%, respectively. Rates for Stage I patients were 92% and 91%, respectively. Rates for Stage II patients were 80% and 71%, respectively. In Stage II patients, recurrences usually observed in the abdomen and lungs were treated with radiotherapy and chemotherapy (alkylating agents and adriamycin). (no Refs) (In FRE)

13. PRIMARY RETROPERITONEAL SEMINOMA.

Buskirk SJ, Evans RG, Farrow GM, Earle JD
Div. Therapeutic Radiology, Mayo Clinic, 200 First St. SW, Rochester, MN, 55905
Cancer; 49(9):1934-1936 1982

In a retrospective review (1950-1975) of the Mayo Clinic experience with seminomas (483 cases), 12 patients (2.5%) were found to have a retroperitoneal seminoma without evidence of testicular involvement. The mean age was 47 yr (range, 31-67). Eleven patients were treated by radiation alone, with doses ranging from less than 2,000-5,800 rads. Seven patients are alive with a median follow-up of 6 yr. The median survival of the five that died is 10 mo. Good prognostic factors are typical histopathology and an encapsulated tumor. Poor prognostic factors are atypical histopathology, a nonencapsulated tumor, a symptomatic abdominal mass and a nonfunctioning kidney at the time of diagnosis. Although the review includes few patients, it seems reasonable to suggest irradiation of the tumor bed and paraaortic lymph nodes to a minimum dose of 2,000 rads. Prophylactic treatment of the mediastinum and supraclavicular lymph nodes should be considered if one or more of the poor prognostic factors are present. (Author abstract) (19 Refs)

GYNECOLOGIC NEOPLASMS

14. RADIATION TREATMENT OF CARCINOMA OF THE CERVIX WITH EXTENSION INTO THE ENDOMETRIUM. A REAPPRAISAL OF ITS SIGNIFICANCE.

Prempree T, Patanaphan V, Viravathana T, Sewchand W, Cho YK, Scott RM
Dept. Radiation Therapy, Univ. Maryland Hosp., 22 South Greene St., Baltimore, MD, 21201
Cancer; 49(10):2015-2020 1982

During the period from 1969-1974, 561 patients with proven invasive squamous cell carcinoma of the cervix were treated by irradiation only in the Department of Radiation Therapy, University of Maryland Hospital. Of these, 82 patients were identified as having D and C positive for squamous cell cancer present in the curettings with or without endometrial tissue. Clinical staging was done using FIGO guidelines and the treatment of endometrial extension was the same as with regular cervical cancer. Of 82 cases who are eligible for a minimum 5-yr follow-up, the absolute 5-yr survival is as follows: Stage I, 68% (17/25); Stage II, 62% (18/29); Stage III, 40% (10/25); Stage IV, 0% (0/3). The most interesting features are the local and distant failures in Stage I and II disease. Local failure in Stage I and II in this study is in line with other series. Distant metastasis, however, occurs at the rate of 20% in Stage I between 1-2 yr after treatment (as compared to the control of 5%). In Stage II, the distant disease increases to 24% with a substantial number of local failure with distant metastasis. Based on our findings and others, it seems appropriate to suggest D and C be done routinely in order to identify the extension of cancer into the endometrium and treat them properly. Also it appears appropriate to re-examine our policy of the treatment to minimize both local and distant failures with suggestions outlined in Schema I and II along with possibility of a future chemotherapeutic management to minimize the distant disease. (Author abstract) (15 Refs)

15. SCINTIGRAPHY IN EVALUATION OF INTESTINAL ABSORPTION OF FAT DURING RADIOTHERAPY OF CERVIX CANCER.

Modnikov OP
Kirgiz Res. Inst. Oncology and Radiology, Frunze, USSR
Med Radiol (Mosk); 27(2):74-76 1982

The intestinal assimilation and hydrolysis of fat was studied in 97 patients with carcinoma of the uterine cervix. The profile scanning method was used before, during, immediately after and 6-12 mo after telecobalt therapy (total tumor dose 8,000-10,000 rads). Nine patients were in Stage I, 46 in II, 21 in III and 2 in IV. Twenty-seven practically healthy women served as controls. Fat assimilation and hydrolysis were not impaired before radiotherapy compared with controls, but considerable decrease in the rate of resorption and increase in the time necessary for 50% resorption were observed after administration of half the total dose. These changes reached their maxima immediately after administration of the total radiation dose, but there were no significant differences in the impairment of assimilation and hydrolysis. Considerable but incomplete restoration of fat resorption and hydrolysis was observed 6-12 mo after radiotherapy. The improvement in fat hydrolysis was less marked than that in assimilation. (13 Refs) (In RUS)

HEAD AND NECK NEOPLASMS

16. FACTORS AFFECTING THE SURVIVAL OF PATIENTS WITH NASOPHARYNGEAL CARCINOMA.

Hsu MM, Lynn TC, Hsieh T, Huang SC, Tu SM
Dept. Otolaryngology, Natl. Taiwan Univ. Hosp., Taipei, Taiwan
Taiwan I Hsueh Hui Tsa Chih; 80(12):1296-1306 1981

Nasopharyngeal carcinoma (NPC) is considered to be characteristic for Chinese of the southern China. In order to study various factors, (including age, sex, pathological classification and staging) influencing survival, computer analysis of survival data were undertaken in 1,555 patients (1,177 males, 378 females; 4-77 yr old). Actuarial survival rates from life tables were used. All patients were followed, some for up to 11 yr, with a follow-up rate of 92.5%. Pathologically all case were verified to be epidermoid carcinoma or undifferentiated anaplastic carcinoma. They were treated primarily by radiotherapy. The overall 1-, 2-, 5-and 10-yr survival rates were 82.7%, 67.4%, 47.8% and 39.8%, respectively. Females generally had better prognosis than males, especially in those 40 to 59 yr old. In males, younger patients had better prognosis whereas in females age was not a significant prognostic factor. Patients with cervical excisional biopsy before radiotherapy and those with residual tumors at the nasopharynx and/or neck region after radiotherapy had poor prognosis. Pathological classification did not significantly influence the prognosis of NPC patients while clinical staging did. (28 Refs) (In CHI)

17. NASOPHARYNGEAL ANGIOFIBROMA: RADIATION VS SURGERY.

Fahey DJ, Buolos EJ, Dayem HA, Alker G
Otolaryngology Dept., State Univ. New York at Buffalo, Buffalo, NY
Ear Nose Throat J; 61(4):233-237 1982

Juvenile nasopharyngeal angiofibroma (JNA), despite its benign histology, can be a highly destructive bone disease which sends tumor processes throughout the nasal cavity. Diagnosis of JNA was made in a 14-yr-old boy by computed tomography of the head, nasopharyngoscopy and transnasal biopsy. Since the tumor was not readily resectable, radiation was the therapy of choice. The patient received 200 rads daily to a total of 4,000 rads in 20 increments over a period of 27 days. JNA is a slowly regressing tumor and a mass was still detected in the nasopharynx and sphenoid sinus until 20 mo post-therapy. The patient was free of disease 33 mo postirradiation with normal facial maturation and symmetry. When JNA is treated with radiation, treatment doses and ports must be planned individually to cover total tumor mass while protecting radiosensitive structures. Arguments against radiation therapy for JNA are presented; among the most dangerous long-term complication is carcinogenesis with two such cases reported in patients who received doses greater than 9,000 rads. (18 Refs)

18. CARCINOMA OF THE TONSILLAR REGION. RESULTS OF EXTERNAL IRRADIATION.

Tong D, Laramore GE, Griffin TW, Russell AH, Tesh DW, Taylor WJ, Martenson JA

Dept. Radiation Oncology, NNIIO, Univ. Washington, Univ. Hosp., RC-8, 1959 N.E. Pacific St., Seattle, WA, 98195

Cancer; 49(10):2009-2014 1982

A retrospective analysis is made of 104 patients treated with photon megavoltage radiotherapy for squamous cell carcinoma of the tonsillar region during the period 1965-1975. Moderately differentiated squamous cell carcinoma was the most common histological grade. Fifty-three per cent of the cases presented with cervical lymphadenopathy with three cases of bilateral involvement. The 3 yr local control rate was 100% for Stage I, 74% Stage II, 49% Stage III, and 33% Stage IV. Two Stage III cases and one Stage IV case developed subsequent contralateral neck disease. No patient with either T1N0 or T2N0 tumor failed in the ipsilateral or contralateral neck despite the fact that 42% of the T1N0 cases and 37% of the T2N0 cases were treated with unilateral portals. The prognostic significance of the T and N stages, treatment techniques, as well as dose response relationships are analyzed and the literature is reviewed. (Author abstract) (20 Refs)

19. TUMORAL RECURRENCE IN CARCINOMA OF THE LIP: SALVAGE RETREATMENT BY CURIETHERAPY.

Nguyen TD, Douchez J, Combes D, De Lafontan B, Daly N, Combes PF

Institut Jean Godinot, 1, ru du general Koenig, BP 171, 51056 Reims Cedex, France

Ann Radiol (Paris); 25(3):207-209 1982

Authors record 31 observations of local recurrences arising from squamous cell carcinoma of the lip and retreated by curietherapy. Comparison is made between this failure group (Group I) and a series of 116 patients simultaneously treated by curietherapy (Group II), with a curative intent. Tumoral recurrences occurred in 16 cases after external radiotherapy, in 11 cases after surgery, and in 4 cases after curietherapy. Clinical staging reveals a 30% incidence of T3 T4 among Group I patients while only a 7% incidence is observed in Group II patients. Nevertheless, local salvage by curietherapy is obtained in 90% of all cases. Patients referred for treatment of local recurrence present a threefold rate of later cervical metastatic nodes (30%, 6 patients/31). Survival is not modified but cosmetic results are seriously aggravated after re-treatment with constant fibrosis. (Author abstract) (5 Refs) (In FRE)

20. POSSIBILITIES AND LIMITATIONS OF RADIOTHERAPY IN TREATMENT OF THYROID CANCER.

zur Horst-Meyer H, Correns H-J
Geschwulstklinik des Bereiches Medizin (Charite), Humboldt-Universitat zu Berlin, Schumannstrasse 20-21, 1040 Berlin, E. Germany
Z Aerztl Fortbild; 76(1/2):15-17 1982

Patients with thyroid cancer (TC) were evaluated. The most important factor in the biological evaluation was the histological type, followed by the age of patient, spreading of the TC, lymph node involvement, metastases, and Iodine-metabolism determined by 131I uptake by the thyroid stimulating hormone. Treatment of TC consisted of removal of whole gland, followed 14 days later with radioactive-I therapy until salivary gland region gave double amount of impulses compared with the surrounding tissue when using scintigraphy. Percutaneous irradiation of lymph paths in the neck was performed 14 days later as a treatment of the enlarged lymph nodes (since surgical removal of such lymph nodes does not improve results of surgery). Hormone substitution treatment was radioactive-triiodothyronine. Patients with inoperable TC were treated with aggressive irradiation therapy. This treatment was administered regularly since 1974. Good results and repeatedly long survival were observed. Number of patients and time span were too short to publish the results. (15 Refs) (In GER)

21. CHILDHOOD RHABDOMYOSARCOMAS OF THE HEAD AND NECK: 2 CASE REPORTS ON SALIVARY GLANDULAR AND PARAGLANDULAR INVOLVEMENT.

Daou RA, Schloss MD
(c/o Schloss), 2300 Tupper St., Montreal, P.Q., H3H 1P3, Canada
J Otolaryngol; 11(1):52-56 1982

Rhabdomyosarcoma is reviewed and two new cases of glandular and paraglandular rhabdomyosarcoma seen and treated at the Montreal Children's Hospital (MCH) are presented. Of 48 cases of rhabdomyosarcoma encountered at MCH within the last 32 yr, 20 involved the head and neck. The cases presented include those of a 7-yr-old male with parotid rhabdomyosarcoma and a 5-yr-old male with submandibular paraglandular rhabdomyosarcoma. Both patients were successfully treated using surgical excision followed by radiotherapy and chemotherapy. This multimodal therapy has proved superior to any single therapy and has eliminated the need for mutilating surgery. Current drugs of choice for chemotherapy are vincristine, actinomycin D, cyclophosphamide, and adriamycin. Radiotherapeutic dose varies depending on patient age and diagnosis, although patients less than 3 yr old do not receive a total dose of greater than 4,000 rad. Supervoltage irradiation is used in 200 rad fractions 5 days/wk. Follow-up of both patients showed no recurrences of metastasis. (20 Refs)

22. FIRST RESULTS OF FAST NEUTRON THERAPY FOR ADVANCED HEAD AND NECK CANCER IN KRAKOW.

Skolyszewski J
Instytut Onkologii, Garcarska 11, 31-115 Krakow, Poland
Radiobiol Radiother (Berl); 23(1):15-19 1982

Cyclotron using U120 as the source of fast neutrons (av energy of 5.5 Megavolts) was used in the therapy of 49 patients with advanced cancer of the head and neck. Twenty-eight of the patients (1 man, 27 women; 27-74 yr old) who received only fast neutron therapy were observed for at least 1 yr. A well differentiated cancer was histologically diagnosed in all the patients who were considered inoperable, (advanced disease or poor general state of health). Five patients had the tumor located in tongue, six in oropharynx, seven in pharynx, four had recurrent tumors in pharynx after surgery, two below the pharynx, two in the major salivary glands, and two had metastases. Radiation dosage was 1056-1519 rad administered in 16-23 sessions. Skin reactions consisted of erythema and desquamation. Mucosal reaction was severe in two patients. One patient had to interrupt the therapy and the other died, because of general sepsis and cardiac failure. A few mo after the therapy, five of the patients developped necrosis and one of them died. After 1 yr, nine of the patients were living free of the disease, although the therapy was considered only palliative. (14 Refs)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

23. EFFECT OF INDUCTION RADIOTHERAPY-CHEMOTHERAPY AND SPLENECTOMY ON LYMPHOID SUBCLONES IN PATIENTS AFFECTED WITH HODGKIN'S LYMPHOMA IN COMPLETE REMISSION.

Leoni P, Montroni M, Montillo M, Salvi A, Centurioni R, Fanciulli E
Istituto di Patologia Speciale Medica e Metodologia Clinica, Universita di Ancona, Ancona, Italy
G Clin Med; 62(10):685-692 1981

Forty-nine patients with Hodgkin's lymphoma had complete staging, together with determination of T, B, and total lymphocytes. Such evaluations were made at the time of diagnosis, after induction therapy, approx 1 yr later (36/49), 2 yr later (23/49), and 3 yr later (17/49). Laparotomy and splenectomy were performed on 27 of the patients. According to clinical or pathological staging, three patients were Stage I, 25 were Stage II, 15 were Stage III, and 6 were Stage IV. Symptoms were present in 19 of the patients and absent in 30. Histologic types included nodular sclerosis (31), mixed cellularity (8), lymphocyte depletion (5), and lymphocyte prevalence (3). Treatment consisted of radiotherapy and chemotherapy MOPP (mustine, oncovin, prednisone, and procarbazine). No maintainance therapy was administered. Basic immunological deficits of the patients were worsened by the induction therapy. Total and T lymphocyte values recovered after 2 yr and, after 3 yr, were above basic values. B lymphocyte values were somewhat depressed by the induction therapy but recovered rapidly. Except for the T lymphocyte values, lymphocyte values of the patients that underwent splenectomy were always above those of the non-splenectomized patients. (14 Refs) (In ITA)

24. THE ROLES OF STAGING LAPAROTOMY, CHEMOTHERAPY, AND RADIOTHERAPY IN THE MANAGEMENT OF LOCALIZED DIFFUSE LARGE CELL LYMPHOMA: A STUDY OF 75 PATIENTS.

Lester JN, Fuller LM, Conrad FG, Sullivan JA, Velasquez WS, Butler JJ, Shullenberger CC
(c/o Fuller) Dept. Radiotherapy, Univ. Texas M. D. Anderson Hosp., 6723 Bertner Ave., Houston, TX, 77030
Cancer; 49(9):1746-1753 1982

A retrospective study of 75 laparotomy-studied Stage I and II patients with diffuse large cell (histiocytic) lymphoma was conducted to determine the relative contributions of laparotomy, radiotherapy, and combination chemotherapy to their management. The treatment programs were radiotherapy alone, radiotherapy followed by adjuvant chemotherapy, and alternating chemotherapy-radiotherapy. Treatment selection was based on disease presentation, with limited therapy used for favorable patterns and intensive therapy used in prognostically unfavorable settings. Disease-free survival was best in those treated with initial chemotherapy, even though these patients comprised the least favorable prognostic group. A select subset of patients, those with extranodal head and neck disease, obtained good results with radiotherapy alone, but for other presentations this was not a successful approach. Differences in results for the three treatment programs are discussed in relation to future treatment decisions. (Author abstract) (33 Refs)

25. NON-HODGKIN'S LYMPHOMA IN THE GASTROINTESTINAL TRACT.

Melsom H, Rode L, Kaalhus O, Elgjo RF, Langholm R, Marton P

Alminnelig avdeling, Det Norske Radiumhospital, Montebello, Oslo 3, Norway

Tidsskr Nor Laegeforen; 102(6):374-377 1982

Primary non-Hodgkin's lymphoma of the gastrointestinal tract was diagnosed in 61 patients. Lymphosarcoma was found in 20 patients, reticulosarcoma in 32 and unclassifiable lymphoma in 9. According to the Kiel classification, lymphocytic lymphoma was diagnosed in 2 patients, lymphoplasm cytoid lymphoma in 22, centrocytic lymphoma in 2, centroblastic/centrocytic lymphoma in 18, lymphoblastic lymphoma (including Burkitt's lymphoma) in 8, immunoblastic lymphoma in 4, and unclassifiable lymphoma in 4. Pains, weight loss, emesis and nausea were the most frequent symptoms. The disease was diagnosed in most patients within 3 mo from the onset of the first symptoms The tumor was localized in the stomach in 31 patients, in the small intestine in 15, in the large intestine in 5, in the ileocecal region in 4, and in the mesentery in 6. Thirty patients were in Stage I, 31 in II. Eleven patients (10 in Stage I and 1 in II) were subjected to surgery only, 19 (including 10 in Stage I) to surgery and radiotherapy, 31 (including 10 in Stage I) to surgery, radiotherapy and cytostatic therapy. The 5-yr survival rate was higher than 60% for the patients with gastric lymphomas, but lower than 25% for those with tumors of other localization in the intestine. The 3-yr survival rate was 9/11 after surgery only. The 5-yr survival rate was 13/19 after surgery with postoperative radiotherapy and 3/31 after surgery with radiotherapy and cytostatic therapy. Surgery with postoperative radiotherapy was found to be most effective in patients with limited disease. (10 Refs) (In NOR)

26. UNUSUAL FORM OF MYCOSIS FUNGOIDES; SUCCESS OF RADIOTHERAPY.

Fierens F, Bourlond A, Guilmot-Bruneau MM, Saussez-De Temmerman A

Service de Dermatologie, Faculte de Medecine, Universite catholique de Louvain, 52, avenue E. Mounier, Tour Vesale, B-1200 Bruxelles, Belgium

Dermatologica; 164(2):101-103 1982

Mycosis fungoides of the nose in a 76-yr-old man disappeared slowly after the administration of 6,500 rad to the base of the nose and 5,500 to the ridge of the nose. The lesion, 5 x 3 cm in size and 0.5 cm in depth, had developed over a period of 2-3 yr and was resistant to local corticosteroid therapy. No adenopathies or extensive invasion were noted. The unusual site, the isolation of mycosis fungoides lesions, and the exceptionally favorable results obtained are noted. (no Refs) (In FRE)

MUSCULOSKELETAL NEOPLASMS

27. THE USE OF A SHORT DISTANCE COBALT UNIT IN THE TREATMENT OF PRIMARY SKIN TUMOURS.

Holmes ME, Bomford CK, Phil M

Weston Park Hosp., Whitham Road, Sheffied S10 2SJ, England

Br J Radiol; 55(651):225-228 1982

Over an 8-year period 167 patients with primary skin tumors in difficult treatment sites have been treated using a short distance cobalt unit. The advantage of this unit over conventional superficial therapy is the lower absorption of radiation in underlying bone and cartilage. The local failure rate of 5% for basal cell carcinomas and 12% for squamous cell carcinomas is acceptable, and, of the remaining cures, there have been no problems with local necrosis and all have a good functional result. (Author abstract) (5 Refs)

28. X-RAY TREATMENT OF SKIN CANCER: SHORT FRACTIONATION TECHNIQUE.

Shelmire DS

8226 Douglas Ave., Suite 549, Dallas, TX, 75225

Cutis; 29(4):345-347 1982

Five patients with squamous cell and 46 patients with basal cell carcinoma were followed for 1-5 years after treatment with three doses of 1,000 rad of x-radiation in a 5-10 day period. All tumors were greater than 1 cm in size. Sites included head, neck, eyelid, nose, but not ear (prescribed at this fractionation). Recurrence was seen in two patients after 1 year and in three patients after 2 years; two of the recurrences involved patients already in recurrence after surgical removal. Limitation of this short fractionation to patients greater than 60 yr old, is recommended. (5 Refs)

29. CONVENTIONAL RADIOTHERAPY IN THE TREATMENT OF LENTIGO MALIGNA AND LENTIGO MALIGNA MELANOMA.

Harwood AR

Dept. Radiation Oncology, Princess Margaret Hosp., 500 Sherbourne St., Toronto, Ontario, Canada

J Am Acad Dermatol; 6(3):310-316 1982

Conventional fractionated radiotherapy (RT) was given to 40 patients (12 men, 28 women, 30-96 yr old; 37/40 were greater than 60 yr old) with lentigo maligna (LM: 17/40) or lentigo maligna melanomas (LMM: 23/40), usually of the face (32/40). Local tumor control was complete in all patients. Two residual tumors and two local recurrences were successfully treated by surgery (3/4) or repeat RT (1/4). LM regressed completely within 3-15 mo (av, 7 mo); LMM regressed completely within 1-24 mo (av, 8 mo). No regional or distant recurrences developed. The duration of complete remission was 2-5 yr in 13/40 patients (6/13 with LM, 7/13 with LMM) and 7-13 yr in 2/40 (1/2 each with LM and LMM). The cosmetic results of RT were excellent. It is concluded that conventional fractionated RT is a simple and effective outpatient treatment for LM and LMM. (11 Refs)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

30. SEQUENTIAL CHEMOTHERAPY AND RADIOTHERAPY MODALITIES IN SMALL CELL LUNG CARCINOMA. PRELIMINARY RESULTS.

Le Chevalier T, Arriagada R, Pico JL, Rouesse J, Hayat M, Duroux P, Baldeyrou P, Homasson JP

Institut Gustave-Roussy, rue Camille-Desmoulins, F-94805 Villejuif Cedex, France

Bull Cancer (Paris); 69(1):98-101 1982

Two non randomized therapeutic trials have been conducted in oat cell carcinoma of the lung with limited disease. The first protocol combined chemotherapy (adriamycin, cyclophosphamide, VM 26, procarbazine) with mediastinal and supra-clavicular radiotherapy in classical fractionation (40 grays in 4 wk). The second combined a more intensive chemotherapy (adriamycin, VP 16, methotrexate, cyclophosphamide) with an alternating radiotherapy (3 series of 15 grays). All patients received prophylactic brain irradiation. Preliminary results show a 9 mo survival rate of 34% and 62.5% respectively. In addition, all patients in the second protocol presented a complete response at the end of the induction treatment. These preliminary data encourage proceeding with this kind of combined treatment. (Author abstract) (7 Refs) (In FRE)

31. EXTENSIVE DISEASE SMALL CELL CARCINOMA OF THE LUNG. TRIAL OF NON-CROSS RESISTANT CHEMOTHERAPY AND CONSOLIDATION RADIOTHERAPY.

Dillman RO, Taetle R, Seagren S, Royston I, Koziol J, Mendelsohn J

Div. Hematology/Oncology, VA Medical Center VIIIE, 3350 La Jolla Village Dr., San Diego, CA, 92161

Cancer; 49(10):2003-2008 1982

Twenty-nine patients with extensive disease, small-cell carcinoma of the lung, were treated with two cycles of intensive combination chemotherapy: HexaVAC (hexamethylmelamine, vincristine, adriamycin, cyclophosphamide). Responders received prophylactic cranial radiation (2,000 rad/10 fractions) and non cross resistant chemotherapy via a schedule of alternating cycles of CMV (cyclophosphamide, methotrexate, VP-16-213) and AMV (Adriamycin, methotrexate, VP-16-213). Whenever a complete response was achieved, consolidation radiotherapy was given to the lung primary (4,000 rad/20 fractions, split dose) and abdominal metastases (2,000 rad/10 fractions) synchronous with CMV therapy. The complete response rate was 14% with HexaVAC, but increased to 38% during CMV/AMV. Total response rate (complete and partial) was 59% and median survival was 42 wk. Prophylactic brain radiation prevented clinical relapse in the brain in all 14 patients who received it. However, consolidation radiotherapy failed to prevent clinical relapse in the lung and/or liver, and therapeutic brain radiation (3,000 rad) failed to prevent relapse in that site. The simultaneous administration of radiotherapy and chemotherapy was well-tolerated although two patients with poor performance status died of infectious complications while leukopenic. In spite of the high response rate, durable remissions with prolonged disease free survival were rare. Further evaluation of induction, consolidation, and maintenance modes of therapy are indicated. (Author abstract) (21 Refs)

32. INDICATIONS FOR RADIOTHERAPY BEFORE AND AFTER SURGERY IN BRONCHIAL CARCINOMA.

Meyer H

Servico de Cirurgia Toracica, Hospital Raphael de Paula Souza, Curicica - RJ - TCBC, Brazil

J Pneumol; 7(1):7-8 1981

Indications for radiotherapy (RT) before and after surgery in bronchial carcinoma were considered. Although the use of RT as a treatment is being disputed, RT is widely administered. Effect of RT depends on the histologic type of the bronchial carcinoma. RT is indicated before surgery to reduce spreading and after surgery when the mediastinal lymph nodes were involved. (9 Refs) (In POR)

INSTRUMENTATION AND TECHNOLOGY

33. THE DOSIMETRIC PROPERTIES OF AN APPLICATOR SYSTEM FOR INTRAOPERATIVE ELECTRON-BEAM THERAPY UTILIZING A CLINAC-18 ACCELERATOR.

McCullough EC, Anderson JA

Div. Radiation Therapy, Dept. Oncology, Mayo Clinic/Foundation, Rochester, MN, 55901

Med Phys; 9(2):261-268 1982

A prototype electron applicator system providing circular and rectangular fields for use in intraoperative electron beam therapy with a Varian Clinac 18 linear accelerator has been fabricated. The dosimetric properties of this system for a variety of electron-beam energies, applicator sizes, and x-ray collimator settings was documented. Significant findings include: (a) surface dose values are in excess of 90% for electron energies of 12 MeV and above; (b) for the 18-MeV beam, the deepest depth where the central axis dose is 90% of its maximum value is in excess of 50 mm for the circular applicators whose diameters are in excess of 5 cm; and (c) the treatment time to deliver 1,000 rads 'given dose' (at a given dose rate of 300 Mu/min) is on the oder of 3-4 min. Cross-field behavior is acceptable for the intended application and x-ray contamination is less than 4% for any applicator/electron energy combination. A system for irregular field blocking and TLD verification dosimetry has been developed. (Author abstract) (4 Refs)

34. A MICROCOMPUTER-BASED SYSTEM FOR RADIOTHERAPY BEAM COMPENSATOR DESIGN AND PATIENT CONTOUR PLOTTING.

Andrew JW, Aldrich AE

Cancer Treatment and Res. Foundation Nova Scotia, Victoria General Hosp., Halifax, Nova Scotia B3H 2Y9, Canada

Med Phys; 9(2):279-283 1982

A microcomputer-based system for radiotherapy beam compensator design has been constructed. The patient surface measuring device which projects a grid pattern on the patient is attached to the collimator of a therapy treatment simulator. A linear motion potentiometer, pivoted at one end on a ball joint attached to the collimator, is extended to touch each grid point in turn. The extension of the potentiometer is monitored by a microcomputer which calculates the coordinates of the patient's surface as each grid point is entered. A template for compensator construction is subsequently printed on the microcomputer printer. The patient surface profile along any grid line can also be plotted and used in conjunction with the compensator data to produce an isodose distribution for the compensated field. (Author abstract) (25 Refs)

35. AFTERLOADING TECHNIQUE FOR INTERSTITIAL IRRADIATION OF LESIONS IN DEEP-SEATED ORGANS.

Kitagawa T, Kakehi M, Kunieda T, Tsukiyama I, Hamada M, Inakoshi H, Sakudo M, Suemasu K, Matsumoto K, Yoneyama T, Iizuka T, Nomura K, Kawachi K
Radiation Therapy Dept., Natl. Cancer Center, 1-1, Tsukiji 5-chome, Chuoku, Tokyo 104, Japan
Radiology; 143(2):543-547 1982

An afterloading procedure using iridium 192 seeds was developed for the control of both localized primary lesions that are difficult to remove and superficial residual lesions that remain after the partial removal of tumors in relatively inaccessible, deep-seated organs. This technique makes possible the delivery of a minimal radiation dose to lesions in deep-seated organs. Fewer complications result, the seeds can be adjusted at appropriate intervals in proportion to the amount of radioactivity desired, and radiation exposure to personnel can be reduced. This paper describes the techniques and apparatus used to place the seeds in the tubing. Primary lesions of the urinary bladder, the prostate gland, and the esophagus, residual lesions in the brain and lung, and metastases in intrapelvic lymph nodes were treated. No technical difficulties or complications were encountered. Radiation exposures to personnel were minimized. The results indicate that the procedure has practical applications. (Author abstract) (10 Refs)

36. EVALUATION OF GAMMA-DISTANCE THERAPY BY FRACTIONATING THE DAILY DOSE IN INOPERABLE MALIGNANT TUMORS.

Mardynskij JuS, Leskov VP
Forschungsinstitut fur medizinische Radiologie der AdmW der UdSSR, ul. Koroljeva 4, 249020 Obninsk, UdSSR, USSR
Radiobiol Radiother (Berl); 23(1):20-24 1982

One hundred thirty-one patients (97 men, 34 women; 36-80 yr old) with cancer did not have surgery. Only 98 of them were considered inoperable. Histologic diagnosis was established in 128 of the patients. Fifty-nine patients had keratinous squamous carcinoma (CA), 18 had non keratinous squamous CA, 29 had undifferentiated CA, 19 had adenocarcinoma, and 3 had others. Seventy of the patients had pulmonary CA, 26 had mandibular and facial CA, 18 had rectal CA, and 17 had esophageal CA. Gamma distance therapy was administered twice daily in equal doses of 2-2.2 Gray with 4-6 hr pause. Total dosage of less than 40 Gray was administered to 9 of the patients, 40-50 Gray to 29, 51-60 Gray to 68, 61-70 Gray to 23, and greater than 70 Gray to 2. Early and immediate results of radiotherapy with fractionated daily dose indicated complete remission (RE) in 24 of the patients, greater than 50% RE in 42, partial RE in 40, no effect in 19, and worsening in 6. The fractionated daily dose was better tolerated, the number of side reactions was lower, and less severe. This type of radiotherapy was especially effective in pulmonary and gastrointestinal CA. (6 Refs) (In GER)

37. WORKING WITH CANCER PATIENTS IN RADIATION THERAPY.

Barstow LF
Yale-New Haven Hosp., New Haven, CT
Health and Soc Work; 7(1):35-40 1982

The establishment of a social work program in the radiotherapy (RT) clinic of the Yale-New Haven Hospital is described. While the main focus of the program is individual work with cancer patients and their families, group work is also an important component of the service. The program is geared to evaluating and fulfilling the patient's psychosocial needs both before, during, and after RT. The specific stresses involved in RT including depression, anger, guilt, anxiety about debility or death, role changes at home and work, financial problems, and dependence on the medical system for care, are dealt with by the program. The physician's inclusion of the social worker in the treatment team during the patients initial clinic evaluation gives the social worker greater acceptance by the patient and family. The social work program has promoted more informal coordination and collaboration between social workers and other oncology services at the hospital. Organization of this collaboration on a more formal basis for joint program development is underway. (6 Refs)

PRE-CLINICAL STUDIES

38. MODIFYING EFFECT OF CALCIUM ON THE EFFICACY OF RADIOTHERAPY OF CANCER.

Frenkel' LA, Iakimova TP, Kniazeva MV
Res. Inst. Medical Radiology, Kharkov, USSR
Radiobiologiia; 22(1):130-133 1982

The modifying effect of calcium on the efficacy of radiotherapy was studied in rats with sc transplanted Guerin's carcinoma. Tumor-bearing animals were subjected to the therapeutic irradiations (350-400 rads) alone or in combination with calcium administration. Calcium concentration in Guerin's carcinoma tissue was 7.0 mg%, compared with 4.02 mg% in the normal muscle tissue. Radiotherapy reduced the calcium level in the tumor tissue to 5.5 mg%. Complete tumor regression was observed in 80% of the animals subjected to radiotherapy alone. Histological manifestations of tumor regression included clusters of the plasmacytes and lymphoid cells, formation of lymphoid follicles, and appearance of the glandular-like tissue with large spherical epithelial cells. Radiotherapy in combination with calcium administration failed to induce tumor regression. It was suggested that the reduced efficacy of radiotherapy after calcium administration is associated with the swelling of the cell membranes and with weakening of the intercellular communications. (8 Refs) (In RUS)

39. TEMPERATURE GRADIENTS AND LOCAL PERFUSION IN A MAMMARY CARCINOMA.

Gullino PM, Jain RK, Grantham FH
NCI, NIH, Bldg. 10, Room 5B-36, Bethesda, MD, 20205
JNCI; 68(3):519-533 1982

Temperature gradients of mammary tumors in random-bred Sprague-Dawley rats under normothermia, hypothermia, and hyperthermia were determined, and their experimental modifications were utilized to assess differences in perfusion rates within the neoplastic tissue. Normothermic tumors showed a circadian rhythm with zenith at midnight and nadir at midday. Differences between highest and lowest temperatures recorded during the 24-hr period reached up to 3 C. Similar oscillations were observed in sc tissue without tumor. An average temperature increment of 0.5-1.0 C was observed when a tumor was transferred from the sc to the abdominal location. Gradients larger than 1 C were observed within the same tumor in locations only a few millimeters distance from each other. The nonuniformity in temperature within normothermic tumors was exaggerated during hyperthermia. No appreciable change in temperature gradients was seen within a normothermic tumor when tumor blood flow was doubled or reduced to one-third of the basal level. Hyperthermia increased both volume and temperature of tumor efferent blood. As expected, decrease or increase in blood flow during hyperthermia increased or decreased tumor temperature, respectively, but substantial temperature gradients up to 2 C still persisted within adjacent regions. The extent of temperature changes in the tumor could not be correlated with a known change in blood supply. A pulse of cold serum into the tumor afferent artery produced a substantial reduction of tumor blood flow, but only a small depression in tumor temperatures, and a very small change in tumor temperature gradients. No appreciable modification could be brought about in tumor temperature levels and temperature gradients within the tumor by pulses of cold serum in the afferent artery during hyperthermia. After external cooling of the tumor, the time necessary to compensate for temperature depression did not correlate with either the reduction of temperature or with the thickness of the tumor tissue separating the thermistor from the cold source. The results indicate extensive anisotropy of temperature and blood distribution within growing neoplastic tissue and suggest that heat transfer by convection within the tumor is much less effective than it is commonly assumed. (Author abstract) (24 Refs)

40. CELL SURVIVAL AS A DETERMINANT OF TUMOR CURE FOR RAT 9L SUBCUTANEOUS TUMORS FOLLOWING MICROWAVE-INDUCED HYPERTHERMIA.

Wallen CA, Michaelson SM, Wheeler KT
Dept. Radiology, Univ. Utah Medical Center, Salt Lake City, UT, 84132

Eur J Cancer Clin Oncol; 18(1):37-44 1982

The relationship of cell survival to tumor cure after local hyperthermia treatment was studied in sc 9L rat tumors. Tumors weighing 0.2-0.4 g were heated to 42.5, 43.0, 44.0 and 45.0 C by local exposure to 2,450 MHz microwaves. Cell survival data was obtained by an in vivo to in vitro colony forming technique and a cell survival curve was constructed for each temperature as a function of exposure duration (0-180 min). Cell survival followed a simple exponential function with an increasingly steeper slope as temperature increased. At 44 C, it was observed that cells from large tumors (1.0-1.4 g) were inactivated at the same rate as those from small tumors. When tumor response was monitored in the small tumors for 90 days following treatment, a direct correlation between the percentage of tumor cures and time at 44 C (0-60 min) was observed; therefore, at 44 C, tumor cure was exponentially related to cell survival in this range. However, when approximately the same cell survival was obtained with three other temperature-time regimens, the resulting percentage of tumor cures was not the same. These results indicate that while cell survival is related to tumor cure, it is probably not the primary determinant of tumor response following local hyperthermia in these 9L sc tumors. (Author abstract) (29 Refs)

☆ U.S. GOVERNMENT PRINTING OFFICE : 1982—361-847/125

AUTHOR INDEX WITH CITATION NUMBERS

Abadir R ... 10
Adachi H ... 1
Aldrich AE ... 34
Alker G ... 17
Anderson JA ... 33
Andrew JW ... 34
Arriagada R ... 30
Baldeyrou P ... 30
Barstow LF ... 37
Benjamin RS ... 3
Bomford CK ... 27
Bonura J ... 3
Borkon WD ... 10
Bourlond A ... 26
Bugat R ... 8
Buolos EJ ... 17
Buskirk SJ ... 13
Butler JJ ... 24
Caprioli R ... 3
Centurioni R ... 23
Cho YK ... 14
Combes D ... 19
Combes PF ... 19
Combes PF ... 8
Conrad FG ... 24
Correns H-J ... 20
Daly N ... 19
Danczak-Ginalsk ... 5
Daou RA ... 21
Dayem HA ... 17
De Lafontan B ... 19
Dillman RO ... 31
Dormandy RH ... 2
Douchez J ... 19
Douchez J ... 8
Dunnick NR ... 6
Duroux P ... 30
Dzihniszewski G ... 7
Earle JD ... 13
Edwards FM ... 10
Elgjo RF ... 25
Evans RG ... 13
Fahey DJ ... 17
Fanciulli E ... 23
Farrow GM ... 13
Feun L ... 3
Fierens F ... 26
Franck D ... 8
Frenkel' LA ... 38
Fujii K ... 1
Fuller LM ... 24
Glatstein E ... 6
Grantham FH ... 39
Griffin TW ... 18
Guilmot-Bruneau ... 26
Gullino PM ... 39
Gutin PH ... 2
Hamada M ... 35
Harwood AR ... 29
Hatano K ... 1
Hayat M ... 30
Heider KM ... 11
Hidaka Y ... 1
Holmes ME ... 27
Homasson JP ... 30
Hsieh T ... 16
Hsu MM ... 16
Huang SC ... 16
Iakimova TP ... 38
Iizuka T ... 35
Inakoshi H ... 35
Jain RK ... 39
Johnston MR ... 6
Kaalhus O ... 25
Kakehi M ... 35
Kamimura S ... 1
Kato T ... 1
Kawachi K ... 35
Kimura T ... 1
Kitagawa T ... 35
Kniazeva MV ... 38
Koga I ... 1
Konoeda K ... 1
Koziol J ... 31
Kudo T ... 1
Kunieda T ... 35
Landry LJ ... 10
Langholm R ... 25
Laramore GE ... 18
Laverdiere J ... 12
Law HT ... 9
Le Chevalier T ... 30
Leavens M ... 3
Leoni P ... 23
Leskov VP ... 36
Lester JN ... 24
Loo TL ... 3
Luna M ... 3
Lynn TC ... 16
Maor M ... 3
Mardynskij JuS ... 36
Martenson JA ... 18
Martin SE ... 6
Marton P ... 25
Matsumoto K ... 35
Matsumura K ... 1
McCullough EC ... 33
Melsom H ... 25
Mendelsohn J ... 31
Meyer H ... 32
Michaelson SM ... 40
Mikami A ... 1
Mikuriya S ... 1
Modnikov OP ... 15
Montillo M ... 23
Montroni M ... 23
Morysinski T ... 5
Newsam JE ... 9
Nguyen TD ... 19
Nguyen TD ... 8
Nomura K ... 35
Ooami H ... 1
Oonishi M ... 1
Patanaphan V ... 14
Phil M ... 27
Pico JL ... 30
Prempree T ... 14
Rode L ... 25
Ross G ... 10
Rouesse J ... 30
Royston I ... 31
Russell AH ... 18
Sagara M ... 1
Sakudo M ... 35
Salewski D ... 11
Salvi A ... 23
Saussez-De Temm ... 26
Schloss MD ... 21
Schwade JG ... 6
Scott RM ... 14
Seagren S ... 31
Sewchand W ... 14
Shelmire DS ... 28
Shullenberger C ... 24
Skolyszewski J ... 22
Spallone A ... 4
Starzynska T ... 5
Stewart DJ ... 3
Suemasu K ... 35
Sullivan JA ... 24
Taetle R ... 31
Taylor WJ ... 18
Tesh DW ... 18
Tong D ... 18
Tsukiyama I ... 35
Tu SM ... 16
Velasquez WS ... 24
Viravathana T ... 14
Von Bulow M ... 7
Wallen CA ... 40
Weinstein SH ... 10
Wheeler KT ... 40
Yoneyama T ... 35
Zur Horst-Meyer ... 20

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S. MAIL

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT 15/82/10

NCI/ICRDB/CT15 82/10

PB82-939010

ICRDB CANCERGRAM

CLINICAL TREATMENT OF CANCER

Radiation Therapy

SERIES CT15 No. 82/10

OCTOBER, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy *If this Cancergram is useful and valuable, please send your comments to the CIDAC address below, since future editions depend on user satisfaction and user needs:*

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr., M.D.

NEWARK PUBLIC LIBRARY

NOV 22 1982

U. S. GOVT. PUBS.
DEPOSITORY 376

In this issue:

- BREAST NEOPLASMS 1-2
- CENTRAL NERVOUS SYSTEM NEOPLASMS 3-5
- DIGESTIVE NEOPLASMS 6-8
- GENITOURINARY NEOPLASMS 9-11
- GYNECOLOGIC NEOPLASMS 12-13
- HEAD AND NECK NEOPLASMS 14-19
- HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS 20-28
- MUSCULOSKELETAL NEOPLASMS 29
- RESPIRATORY AND CARDIOVASCULAR NEOPLASMS 30-35
- INSTRUMENTATION AND TECHNOLOGY 36-41
- PRE-CLINICAL STUDIES 42-52
- REVIEWS 53

BREAST NEOPLASMS

1. RADIOTHERAPY OF EARLY BREAST CANCER.

Ford HT

St. George's Hosp., Tooting, London SW17, England

Breast Cancer Management: The Experience of the Combined Breast Clinic, St. George's Hospital/The Royal Marsden Hospital. Coombes RC, Powles TJ, Ford HT, and Gazet JC, ed. London, Academic Press, 317 pp., 1981.

The Royal Marsden approach to radiotherapy of early breast cancer, radiation technique, and results of radiotherapy for primary breast carcinoma during the period 1969-1974 and in the treatment of medial carcinoma since 1974 are discussed. Treatment policy for early breast carcinoma was based on radical surgery for tumors sited in the outer half of the breast or centrally placed. Radiotherapy was given if histologically confirmed axillary nodes were demonstrated in the operation specimen. Since that period the management of medial carcinoma has involved wide local excision and postoperative radiotherapy. Results of these two series indicate that excision followed by radical radiotherapy may be as effective as mastectomy for control of local disease. (9 Refs)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20.3173/2:

2. THE ROLE OF RADIOTHERAPY IN LOCALLY ADVANCED AND METASTATIC BREAST CANCER.

Horwich A
Royal Marsden Hosp., Sutton, Surrey SM2 5PT, England
Breast Cancer Management: The Experience of the Combined Breast Clinic, St. George's Hospital/The Royal Marsden Hospital. Coombes RC, Powles TJ, Ford HT, and Gazet JC, ed. London, Academic Press, 317 pp., 1981.

Syndromes in advanced breast cancer where radiotherapy plays a major role are discussed, and data on patients are presented. Radiotherapy of bone and brain metastases, epidural spinal cord compression, local and regional recurrence, other sites of metastasis, and locally advanced primary disease (T4 tumors) are discussed. Radiotherapy is important in management of patients with advanced breast cancer and is especially indicated in palliation of localized bone pain due to metastasis. The palliation of CNS involvement is more problematic, though a number of patients have had long symptom-free survival following cranial irradiation. (52 Refs)

CENTRAL NERVOUS SYSTEM NEOPLASMS

3. INTRACRANIAL EPENDYMOMA. RESULTS OF RADIOTHERAPY AT THE UNIVERSITY OF KENTUCKY.

Chin HW, Maruyama Y, Markesbery W, Young AB
(c/o Maruyama) Dept. Radiation Medicine, Univ. Kentucky, Lexington, KY, 40536
Cancer; 49(11):2276-2280 1982

Sixteen patients with intracranial ependymoma received radiation treatment at the Department of Radiation Medicine, University of Kentucky, between 1962 and 1974. The majority of intracranial tumors occurred in children and had an infratentorial location; most adult tumors were supratentorial and adults had a greater tendency for high-grade malignant tumors. The overall 5-yr survival rate was 37% with 50% failure within 3 yr. Survival appeared to be closely related to grade of tumor. Therefore, tumors were classified as ependymoma (well-differentiated) or ependymoblastoma (anaplastic, poorly differentiated). Five-yr survival rate in patients with ependymoma tumors was 71% and with ependymoblastoma 11%. The data and a literature review indicate that radical radiotherapy of the ependymoma produces good patient survival; the ependymoblastoma is not adequately controlled with radical radiotherapy alone and adjuvant therapy may be necessary. (Author abstract) (26 Refs)

4. HIGH-DOSE FRACTION RADIATION THERAPY FOR INTRACRANIAL METASTASES OF MALIGNANT MELANOMA. A COMPARISON WITH LOW-DOSE FRACTION THERAPY.

Vlock DR, Kirkwood JM, Leutzinger C, Kapp DS, Fischer JJ
Section Medical Oncology, Yale Univ. Sch. Medicine, 333 Cedar St., New Haven, CT, 06510
Cancer; 49(11):2289-2294 1982

Malignant melanoma is considered unresponsive to conventional radiation therapy when it is delivered at a daily dose rate of 130-300 rad/fraction. Previous studies have suggested that this is in part due to a large shoulder on the radiation survival curve and that higher dose fractions might be beneficial. High-dose fraction therapy is effective for local control of cutaneous, lymph node, and soft-tissue metastases. Results in 46 patients treated with high- or low-dose fractions for intracranial metastases over the last decade in the Melanoma Unit and Department of Radiotherapy at Yale have been examined. Twenty-six patients received high-dose fraction therapy, generally 600 rad/fraction/wk to 2,400-3,600 rad; 20 patients received low-dose fraction radiotherapy with 125-400 rad/fraction daily. All patients were given steroids, and most received chemotherapy. Results in both groups were similar. Comparison of high- and low-dose fraction patients revealed: improvement in 38 and 35%, respectively, stability in 23 and 25%, and deterioration in 38 and 40%. Median survival was 3 mo in the high-dose fraction group and 2.5 mo in the low-dose fraction group. Presence of hepatic metastases had no significant influence upon median survival in patients who received high-dose fraction radiotherapy. In patients receiving low-dose fraction, survival was 2.25 mo with and 3 mo without hepatic metastases. Death in most patients resulted from progression of central nervous system disease. Side effects, especially headache, were more prominent in the high-dose fraction group. However, in no instance did side effects require discontinuation of therapy. The greater ease of delivery for weekly high-dose fraction radiotherapy outweighed any other difference between the regimens. (Author abstract) (19 Refs)

5. EFFECT OF HYPOTHALAMIC AND PITUITARY IRRADIATION ON PUBERTAL DEVELOPMENT IN CHILDREN WITH CRANIAL TUMORS.

Rappaport R, Brauner R, Czernichow P, Thibaud E, Renier D, Zucker JM, Lemerle J

Hopital des Enfants Malades, 149, rue de Sevres, 75730 Paris Cedex 15, France

J Clin Endocrinol Metab; 54(6):1164-1168 1982

The purpose of the present study was to report on gonadotropin function and puberty of a large group of children treated by cranial irradiation for cranial and neck tumors and medulloblastoma. Forty-five children of pubertal age were investigated. The mean interval time since radiation was 5 2/12 yr. Gonadotropin and gonadal function were evaluated by clinical criteria, plasma sex steroids, and plasma LH and FSH responses to LRH. Puberty was complete or progressing normally in 31 cases and was abnormal in 14 cases. Severe gonadotropin deficiency, with lack of or slow progression of puberty and decreased LH and FSH responsiveness to LRH, was observed in five cases; two of these had moderately elevated plasma PRL levels. Secondary amenorrhea or lack of pubertal progression was found in five other cases. GH deficiency was associated with gonadotropin deficiency in 9 of these 10 cases. Adrenal function, estimated by basal dehydroisoepiandrosterone, dehydroisoepiandrosterone sulfate, and estrone, was normal according to pubic hair stages. In conclusion, complete or partial gonadotropin deficiency can be the consequence of cranial irradiation in children receiving 6,000 rads or less. It is usually associated with GH deficiency. The site of the damage on the pituitary gland or the hypothalamus remains to be demonstrated. (Author abstract) (22 Refs)

DIGESTIVE NEOPLASMS

6. CARCINOMA OF THE ESOPHAGUS. OBSERVATIONS OF 40 YEARS.

Parker EF, Gregorie HB, Prioleau WH, Marks RD, Bartles DM
Medical Univ. South Carolina, 171 Ashley Ave., Charleston, SC, 29403
Ann Surg; 195(5):618-623 1982

The long-term results of treatment of primary carcinoma of the esophagus continue to be poor, and attempts to improve them remain as challenging as any that exist in the field of malignant neoplasia today. Even so, there has been improvement, and this report contrasts age, race, sex, levels of involvement, methods of treatment, and results in our first series of 170 cases, seen between 1940 and 1951, with those in our last series of 300 cases, seen between 1967 and 1975. In the latter group, among those treated by megavoltage radiation as the sole theoretically curative method, the 5-yr survival rate was 1.0%. Among operable patients, there were 15 who had resection without preliminary radiation, with a mortality rate of 40% (6/15), a 2-year survival rate of 13% (2/15), and a 5-year survival rate of 7.0% (1/15). Also among operable patients, there were 75 who had resection following radiation therapy with a mortality rate of 19% (14/75), a 2-yr survival rate of 20% (15/75), and a 5-yr survival rate of 10% (7/75). These rates contrast with a 5-yr survival rate of 0.5% in the 1940-1951 series. Improvements in methods of treatment and adjuncts, such as nutrition, radiation, and operation, are cited. Even so, results in our last group did not show improvement over those in the 1962-1967 series. Therefore, we have begun a new program involving the use of chemotherapy in conjunction with radiation therapy and resection in those cases in which it may be applicable. (Author abstract) (10 Refs)

7. MISONIDAZOLE AND UNCONVENTIONAL RADIATION IN ADVANCED SQUAMOUS CELL CARCINOMA OF THE ESOPHAGUS: A PHASE II STUDY OF THE RADIATION THERAPY ONCOLOGY GROUP.

Ydrach AA, Marcial VA, Parsons J, Concannon J, Asbell SO, George F
Dept. Medicine, Puerto Rico Cancer Center, Puerto Rico
Int J Radiat Oncol Biol Phys; 8(3/4):357-359 1982

Tolerance, tumor response, and survival were evaluated in 42 patients with carcinoma of the esophagus who were treated with an unorthodox radiotherapy fractionation regimen combined with misonidazole (MSD). MSD (1.0-1.25 g/square meter) was administered po 4-6 hr prior to irradiation. Radiotherapy (400-rad fractions) was delivered alternately with two or three fractions/wk for a total of 12 fractions in approx 5 wk. The target vol included the esophagus from the thoracic inlet to the gastric cardia for at least the first eight fractions, and then the grossly evident disease was treated with a 5-cm margin above and below the lesion. The planned radiotherapy course was completed by 30/34 patients. Tumor response was poor in 18 evaluable patients; no change in the tumor was reported in 8/18, and complete response was reported in 2/18. No toxicity was reported in 28/38, and mild paresthesias were reported in 7/38. Median survival was 5 mo. Of 26 evaluable patients at 1 yr post accession, only 1 survived. This particular fractionation with MSD was not recommended for Phase III randomized trials on patients with carcinoma of the esophagus. (12 Refs)

8. COMBINED ADJUVANT THERAPY OF RADICALLY OPERATED COLORECTAL CANCER PATIENTS. (CHEMOTHERAPY, RADIOTHERAPY, AND MER-BCG).

Robinson E, Bartal A, Cohen Y, Haim N, Mohilever J, Mekori T
Dept. Oncology, Nothern Israel Oncology Center, Rambam Medical Center, Haifa 35245, Israel
Cancer Chemother Pharmacol; 8(1):35-40 1982

Long-term follow-up of 73 patients who had undergone curative surgery for colorectal cancer and adjuvant therapy is reported. Patients were randomized into groups to be treated with radiochemotherapy (RC) or RC plus methanol extraction residue of BCG (RCM). Forty-four patients had Dukes' C colorectal cancer (DCC) and 29 Dukes' B2 rectosigmoid cancer (DRC). The major characteristics of these patients are summarized. The RCM and RC subgroups were similar, except that in Stage B2 the female/male ratio was higher in the RC-treated than in the RCM-treated patients. The actuarial survival (AS) at 54 mo was 78% in the RCM subgroup and 26% in the RC subgroup. The difference was statistically significant. At 54 mo the difference in AS was no longer significant (53% for the RCM-treated and 25% for the RC-treated patients). In DRC patients, the AS at 42 mo was significantly better in the RCM-treated patients than in those treated with RC. In DCC of the proximal colon a better survival at 54 mo was obtained in nine patients treated with 5-fluorouracil (5-FU) and methanol extraction residue of BCG than in eight patients treated with 5-FU alone. The survival and disease-free interval at 48 mo in DRC patients were 55% and 46%, respectively, for the RCM-treated patients and 61% and 31% in RC-treated patients. In patients with DCC, the disease recurred in 8 (36.4%) of the RCM group and in 12 (54.5%) of the RC group. In patients with DRC, recurrence developed in six (46.2%) RCM-treated patients and in six (37.5%) RC-treated patients. (32 Refs)

GENITOURINARY NEOPLASMS

9. TREATMENT OF T3 BLADDER CANCER: CONTROLLED TRIAL OF PRE-OPERATIVE RADIOTHERAPY AND RADICAL CYSTECTOMY VERSUS RADICAL RADIOTHERAPY. SECOND REPORT AND REVIEW (FOR THE CLINICAL TRIALS GROUP, INSTITUTE OF UROLOGY).

Bloom HJ, Hendry WF, Wallace DM, Skeet RG
Dept. Radiotherapy and Oncology, Royal Marsden Hosp., Fulham Road, London SW3 6JJ, England
Br J Urol; 54(2):136-151 1982

The relative values of preoperative pelvic radiotherapy (4,000 rads) and elective radical cystectomy vs radical radiotherapy (4,000 rads plus 2,000 rads boost) for deeply invasive bladder cancer (category or stage T3 or B2C) have been explored in a multicenter prospective randomized trial involving 189 patients. All patients were eligible for analysis of 5-yr results, 174 had been followed for 7 yr and 81 patients for 10 yr. The results of this trial indicate that the prognosis for patients with deeply invasive (T3 or B2C) carcinoma of bladder is influenced by such factors as age, sex, response to irradiation, tumor size and the presence or absence of pelvic metastases. These factors are analyzed with a review of the relevant literature. At the present state of knowledge, it appears that cystectomy as an elective procedure after preoperative radiotherapy is the treatment of choice for patients aged less than 65, especially males. In patients over 65, and perhaps in females generally, the most suitable primary treatment is radical radiotherapy with salvage cystectomy reserved for highly selected patients with local tumor recurrence. Future research should be directed towards achieving a more frequent and greater response to irradiation, whether it be given preoperatively or as radical treatment. (31 Refs)

10. DISCOURAGING RESULTS FOR HIGH DOSE EXTERNAL BEAM RADIATION THERAPY IN LOW STAGE (O AND A) BLADDER CANCER.

Whitmore WF, Prout GR
Dept. Urology, Massachusetts General Hosp., Boston, MA
J Urol; 127(5):902-905 1982

Eight patients who received high dose external beam radiation therapy for low stage (O and A) bladder carcinoma with curative intent subsequently presented with recurrent tumors or complications of radiotherapy that led to cystectomy. The dismal results of high dose radiotherapy in these patients prompted us to review the published results for so-called definitive radiation therapy in patients with low stage bladder cancer. From this review and our own patients we conclude that high dose external beam radiotherapy is less than optimal treatment for patients with low stage bladder cancer. This is true for the subset of patients with tumor characteristics that place them at high risk for the subsequent development of invasive disease. (Author abstract) (28 Refs)

11. EXTENDED FIELD RADIATION THERAPY VERSUS DELAYED HORMONAL THERAPY IN NODE POSITIVE PROSTATIC ADENOCARCINOMA.

Paulson DF, Cline WA, Koefoot RB, Hinshaw W, Stephani S, Uro-Oncology Research Group
Duke Univ. Medical Center, P.O. Box 2977, Durham, NC, 17710
J Urol; 127(5):935-937 1982

This study was undertaken to determine the disease control and survival advantage of either extended field megavoltage irradiation or delayed androgen ablation in a randomized clinical trial. Comparison of the two treatments, using either time-to-first evidence of treatment failure or survival, demonstrates an advantage to extended field radiation. (Author abstract) (10 Refs)

GYNECOLOGIC NEOPLASMS

12. RESIDUAL CARCINOMA AFTER INTRACAVITARY IRRADIATION OF ENDOMETRIAL CARCINOMA, STAGE I. A STUDY OF WHOLE-ORGAN SECTIONS.

Grontoft O, Risberg B, Stenson S, Westholm B
Dept. Pathology I, Univ. Hosp., S-581 85 Linkoping, Sweden
Acta Obstet Gynecol Scand; 61(2):163-172 1982

Surgical specimens from 87 patients with endometrial carcinoma, Stage I, preoperatively treated by intracavitary irradiation were investigated by a whole-organ sectioning technique. Re-examination of the curettage material showed cancer Stage 0 in 8 (9%) and carcinoma Stage I in 79 cases (91%). In the Stage I cases 57% showed residual carcinoma localized mainly to the myometrium of the uterine body and cornuae. Histological changes in the carcinoma were unevenly distributed, but tumors growing close to the external uterine surface were well preserved. In 40.5%, no carcinoma was present, and in 2.5% the changes found could not be classified. Correlated to disparity in irradiation technique, no significant difference could be demonstrated in the incidence or localization of residual carcinoma. The most important single pretreatment factor combined with the presence of residual carcinoma was myometrial fragments with infiltrating carcinoma in the curettage material (MICC). Computerized analysis of combinations of factors showed that all patients aged over 60 yr with a uterine-sound length exceeding 8 cm had residual carcinoma. Only two patients with infiltration of the myometrium had a completely destroyed carcinoma. The findings indicate that it is unlikely that endometrial carcinoma Stage I with myometrial invasion will be eradicated by intracavitary irradiation. (Author abstract) (26 Refs)

13. CALIFORNIUM-252 NEUTRON CURIETHERAPY FOR ADVANCED CERVICAL CANCER.

Maruyama Y, Bell PR, Yoneda J, Van Nagell JR

Dept. Radiation Medicine, Univ. Kentucky Medical Center, Lexington, KY, 40536

Oncology; 39(4):209-215 1982

Low dose rate neutron radiotherapy using fast neutrons emitted by the radionuclide 252Cf was combined with fractionated x- or gamma rays for the radiotherapy of advanced cervicovaginal tumors. Two different implants schedules were tested to determine the response of the tumors to the scheduling of therapy with the 252Cf either early or delayed in the fractionated radiotherapy course. A 90% frequency of complete local clearance of pelvic tumors was observed by the early application of 252Cf. Neutron curietherapy applied as a boo[illegible]tment at the end of fractionated radiotherapy, resulted i[illegible]y 40% local control. Improved results were observed by early implantation therapy and is postulated to be the result of more effective hypoxic tumor therapy and reoxygenation of the hypoxic pelvic tumor. The two groups of patients were compared as to their general status and medical condition and were found similar in age, frequency of associated disease, body weight and tumor stage. The failures of local control by early 252Cf neutron therapy, occurred in two patients with high-stage tumor and severe vascular disease and suggests that tumor response was partly dependent upon the integrity and elasticity of the small vessel system. (Author abstract) (33 Refs)

HEAD AND NECK NEOPLASMS

14. THE USE OF HIGH-ENERGY ELECTRONS IN THE TREATMENT OF MALIGNANT ORBITAL TUMORS.

Lommatzsch PK, Welker KW, Huttner J, Bauke G

Univ.-Augenklinik, Liebigstrasse 14, DDR-701 Leipzig, E. Germany

Klin Monatsbl Augenheilkd; 180(3):198-202 1982

Eight patients (2 men and 6 women, 36-93 yr old) with lymphatic tumors of the orbit, including non-Hodgkin's lymphoma, were treated with radiotherapy. The orbit was irradiated with 2,000-3,600 rad using a special tube containing a plexiglass rod to protect the eye. Rapid regression and complete remission were obtained in all cases. No recurrences were noted in 6 mo-3 yr observation. Two patients died of causes other than the tumor. (7 Refs) (In GER)

15. RELATIONSHIP BETWEEN THE PROLIFERATING ACTIVITY AND THE RESPONSE OF MOUTH TUMORS TO RADIOTHERAPY.

Karakulov RK, Poliakov PIu, Pelevina II, Kiseleva ES, Dar'ialova SL, Saenko AS
Inst. Chemical Physics, Moscow, USSR
Med Radiol (Mosk); 27(3):16-23 1982

The effect of the kinetic parameters of cell proliferation on the efficacy of radiotherapy (RT) was studied in 11 patients with Stage II-III squamous cell carcinoma of the mouth and oropharynx. The patients received modified fractionated RT: 400 rads/day during the first 3 days, 100 rads, bid during the next 3-10 days up to a total focal dose of 2,600-3,000 rads. After a 7-15-day interval, the irradiations were repeated to a total focal dose of 5,000-6,000 rads. Biopsy specimens were obtained prior to the RT and after application of 1,200 rads. The mitotic index in nonirradiated tumors ranged from 8.0% to 22.5%. The DNA-polymerase index ranged from 19% to 33.2%. Significant (3-5-fold) decrease of MI after irradiation with 1,200 rads was correlated with tumor regression after completion of RT. Similarly, a 4-10-fold decrease of the fraction of proliferating cells coincided with complete tumor regression. Tumor regression did not depend upon the MI or the fraction of proliferating cells prior to the RT. (21 Refs) (In RUS)

16. NEUROTOXIC RADIOSENSITIZERS AND HEAD AND NECK CANCER PATIENTS - HOW MANY WILL BENEFIT?

Cummings BJ, Thomas GM, Rauth AM, Sorrenti V, Black B, Bush RS
300 Sherbourne St., Toronto, Ontario, M4X 1K9, Canada
Int J Radiat Oncol Biol Phys; 8(3/4):343-345 1982

Of 159 patients with primary squamous cell carcinoma of the oral cavity and oropharynx, only 26/111 treated with radical irradiation were eligible for Phase I study of metronidazole (MET) as a hypoxic cell sensitizer. Criteria for eligibility are reviewed. Of 159 original patients, 153 were identified by the investigators, 150 were available for follow-up, 111 were planned for radical radiation, 95 were 30-69 yr old, 70 had normal nervous system history, 64 had no medical contraindication to MET treatment, 62 had no synchronous primary malignancy, 51 could be scheduled to receive 5,000 rad/20 fractions/4 wk, 48 had physician consent for receiving MET, 29 agreed to participate, and 26 had normal nervous system on examination. These 26 patients represent only 16% of the patients with primary carcinoma of the oral cavity or oropharynx and 23% of those who were treated by radical radiation therapy. Criteria for patient selection for studies of hypoxic cell sensitizers must be known so that data from different studies can be assessed appropriately before extrapolation to the general patient population. Factors that might influence patient entry must be taken into account in all clinical trials. (6 Refs)

17. A REPORT ON MISONIDAZOLE IN A RANDOMIZED TRIAL IN LOCALLY ADVANCED HEAD AND NECK CANCER.

Sealy R, Williams A, Cridland S, Statford M, Minchinton A, Hallet C
Dept. Radiotherapy, Groote Schuur Hosp., Cape Town, South Africa
Int J Radiat Oncol Biol Phys; 8(3/4):339-342 1982

The effect of radiotherapy and misonidazole (MISO), a drug which sensitizes hypoxic normal and tumor cells to photon radiation, was examined in 97 patients with inoperable squamous carcinoma of the mouth and pharynx. Fifty patients were given MISO (2 g/square meter (m2) body surface area, po). All patients received a tumor dose of 3,600 rad in 6 fractions in 17 days. Eighteen patients developed toxicity which could be due to MISO therapy. The neuropathy was always sensory in character, with a stocking distribution and often worse at night. One patient experienced a cardiovascular accident and died during therapy. No differences between the patients given radiotherapy alone and those given radiotherapy and MISO were found for time to death or relapse. The blood levels achieved with this dosage scheme might have led to an expectation of 20% improvement in tumor control, but tumor concentrations of the drug are likely to be less than those found in the blood and may vary widely. An improved method of dose scheduling, or possible local application, will have to be found for the drug to be effective as the sole sensitizer. (9 Refs)

18. MISONIDAZOLE IN PATIENTS RECEIVING RADICAL RADIOTHERAPY: PHARMACOKINETIC EFFECTS OF PHENYTOIN TUMOR RESPONSE AND NEUROTOXICITY.

Moore JL, Paterson IC, Dawes PJ, Henk JM
South Wales Radiotherapy and Oncology Service, Velindre Hosp., Cardiff, Wales
Int J Radiat Oncol Biol Phys; 8(3/4):361-364 1982

Tumor response and persistence of neuropathy was studied in 29 patients treated 2.5 yr before with a fractionation regimen and misonidazole (MSD) for advanced tumors of the head and neck. The radiotherapy consisted of 10 fractions administered in 3 wk; MSD (1.2 g/square meter) was given on each treatment day 3-4 hr prior to radiotherapy. The results of treatment using MSD compared quite favorably with those obtained with hyperbaric oxygen therapy. The incidence of MSD neuropathy was approx 55%. Some improvement of neuropathy was observed over the 2.5-yr period in 9/16 patients, but approx 35% of the patients suffered from neuropathy at the time of death or at 2.5 yr after treatment. Although not significantly correlated, patient survival was linked to development of neuropathy as the patients who developed neuropathy tended to survive longer than those who did not develop neuropathy. In 13 patients, administration of phenytoin reduced the half-life of MSD and total-MSD by 25-35% within 5 days of starting treatment. The concentration of MSD at the time of irradiation was unaffected by phenytoin but the maximum plasma concentration probably occurred nearer to hr 2 than hr 3.5. (12 Refs)

19. EXTERNAL IRRADIATION THERAPY OF MALIGNANT TUMORS OF THE THYROID GLAND: ANALYSIS OF 54 CASES.

Hohenberg G, Heckenthaler W
Universitatsklinik for Strahlentherapie und Strahlenbiologie, Alser Strasse 4, A-1090 Wien, Austria
Wien Klin Wochenschr; 94(6):153-157 1982

Fifty-four patients (12 men and 42 women) were treated with external irradiation following surgery for malignant tumors of the thyroid. Prior history of thyroid disease was indicated in 36 cases. Diagnosis was confirmed by scintigraphy and fine-needle biopsy. Surgery was radical in 42 cases and nonradical in 12 cases; 10 patients also underwent modified neck dissection. Tumors included eight follicular carcinomas, seven malignant conversions of adenomas, five papillary carcinomas, five undifferentiated carcinomas, five sarcomas, five partially follicular and partially papillary carcinomas, and five medullary carcinomas. Irradiation was begun in most cases within 3 mo after surgery. Radiotherapy consisted of Co-60 gamma-rays in 12 cases, electrons from a circular accelerator in 38 cases, and gamma-rays plus electrons in 4 cases. Radical surgery was followed by a total dose of up to approx 50 Gray; nonradical surgery was followed by 60-65 Gray over 6-7 wk. Of 54 patients, 30 (9 men and 21 women) died, including 7 with local recurrence, 5 with local recurrence and metastases, and 3 with distant metastases only. The av interval until appearance of recurrence was 9.2 mo. The av survival time was 12.3 mo. The overall 5-yr survival rate was 48.1%. Among surviving patients the only complications were redness of skin, difficulty in swallowing, oral dryness, and loss of appetite. No late effects of radiotherapy were noted. (19 Refs) (In GER)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

20. CONCLUSIONS FROM CLINICAL TRIALS OF THE SOUTHWEST ONCOLOGY GROUP.

Jones SE, Coltman CA, Grozea PN, DePersio EJ, Dixon DO
Section Hematology and Oncology, Dept. Internal Medicine, Univ. Arizona Health Sciences Center, 4-West Clinic Facility, Tucson, AZ, 85724
Cancer Treat Rep; 66(4):847-853 1982

Mature data from four clinical trials conducted by the Southwest Oncology Group from 1971 to 1978 for patients with all stages of Hodgkin's disease (HD) are reviewed in this paper. In the RAC 1 trial of Stage I and II HD we demonstrated that involved-field radiotherapy plus six courses of chlormethine, vincristine, procarbazine and prednisone (MOPP) chemotherapy improved relapse-free survival compared to standard radiotherapy alone (p = 0.12), especially in patients with B symptoms (p less than 0.03) or mediastinal disease (p = 0.08). However, at present, there is no significant difference in overall survival. In the CAR 1 study for patients with pathologic Stage IIB, IIIA, and IIIB HD, we demonstrated that three or four courses of MOPP before radiotherapy produced a 90% complete remission (CR) rate, with 70% of the patients remaining free of disease at 5 yr. In the CAR 2 study for patients with pathologic Stage IIIA or IIIB disease, we demonstrated that chemotherapy alone (MOPP-bleomycin) was as effective as combined modality treatment (MOPP-bleomycin plus radiotherapy) in terms of CR rate (85% versus 89%, respectively), relapse-free survival, and survival. For advanced stages of HD we added doxorubicin to our MOPP-bleomycin schedule and demonstrated that MOP-BAP produced a 77% CR rate compared to 67% for MOPP-bleomycin (p = 0.10). Moreover, MOP-BAP produced consistently superior CR rates and survival in patients with more prognostically favorable presentations of HD. Our new ongoing study (MOPP 6) incorporates many of the concepts derived from these earlier clinical investigations. (Author abstract) (24 Refs)

21. ROLE OF RADIATION THERAPY IN THE TREATMENT OF HODGKIN'S DISEASE.

Hellman S, Mauch P
Joint Center for Radiation Therapy, Dept. Radiation Therapy, Harvard Medical Sch., 50 Binney St., Boston, MA, 02115
Cancer Treat Rep; 66(4):915-923 1982

We reviewed the results of 10 yr of experience in treating 405 patients with Stage IA-IIIB Hodgkin's disease at the Joint Center for Radiation Therapy. It appears that 'total nodal irradiation' may largely be avoided. For supradiaphragmatic Stage I and IIA disease, mantle and para-aortic irradiation result in excellent relapse-free survival except in patients with large mediastinal masses. Stage IIB patients can be treated similarly to those in Stage IIA. Stage IIIA patients treated with total nodal irradiation alone fare less well. Combined modality treatment improves survival markedly but may cause excessive complications. For Stage III1A, we currently recommend that patients be treated with mantle and para-aortic nodal irradiation, with chemotherapy used only in those who fail. We treat Stage III2A and IIIB patients with both chemotherapy and radiation. (Author abstract) (25 Refs)

22. CHEMOTHERAPY AND COMBINED MODALITY THERAPY FOR HODGKIN'S DISEASE: A PROGRESS REPORT ON CANCER AND LEUKEMIA GROUP B STUDIES.

Bloomfield CD, Pajak TF, Glicksman AS, Gottlieb AJ, Coleman M, Nissen NI, Rafla S, Stutzman L, Vinciguerra V, Glidewell OJ, Holland JF
Box 277, Univ. Minnesota Hosp., Minneapolis, MN, 55455
Cancer Treat Rep; 66(4):835-846 1982

Between 1974 and 1977, the Cancer and Leukemia Group B (CALGB) initiated four studies which address current major questions in the therapy for Hodgkin's disease. The efficacy of chemotherapy alone as compared with combined modality therapy in patients with poor-prognosis Stages I and II is evaluated in CALGB 7751. Currently, both therapies produce very high complete remission rates in asymptomatic patients; the remission rate is better with combined modality therapy in symptomatic patients. Single and combined modality therapies are compared for Stage III patients in CALGB 7451. Complete remission rates have been similar, but relapse-free survival is superior for patients treated with total nodal radiotherapy followed by chemotherapy (p = 0.04). In particular, Stage IIIA patients with nodular sclerosis seem to benefit from the inclusion of radiotherapy in their initial treatment. In CALGB 7551, the efficacy of chemotherapy alone versus chemotherapy plus radiotherapy to areas of bulky disease is under study in patients with Stages IIIB and IV. Currently, a relapse rate of less than 10% has been seen among sites irradiated, and survival is best for patients treated with radiotherapy bracketed by chemotherapy. Finally, the role of two alternating non-cross-resistant combination chemotherapy programs is being studied in CALGB 7552. Relapse-free and overall survival is better with the doxorubicin-containing regimen than with either the alternating or alternate chemotherapy program. At present, the median followup for each of these studies is less than 5 years. Further observation is required to answere the critical question relating to prolonged disease-free survival and cure. (Author abstract) (23 Refs)

23. STAGE I AND II HODGKIN'S DISEASE: INVOLVED-FIELD RADIOTHERAPY VERSUS EXTENDED-FIELD RADIOTHERAPY VERSUS INVOLVED-FIELD RADIOTHERAPY FOLLOWED BY SIX CYCLES OF MOPP.

Hagemeister FB, Fuller LM, Velasquez WS, Sullivan JA, North L, Butler JJ, Johnston DA, Shullenberger CC
Div. Medical Sciences, Dept. Medicine, Univ. Texas System Cancer Center, M. D. Anderson Hosp. and Tumor Inst., 6723 Bertner Ave., Houston, TX, 77030
Cancer Treat Rep; 66(4):789-798 1982

Results of laparotomy treatment in staged patients with Stage I or II Hodgkin's disease were investigated in 90 patients treated by involved-field (IF) radiotherapy, 65 by extended-field (EF) radiotherapy, and 41 by IF plus MOPP chemotherapy [mechlorethamine, vincristine (oncovin), prednisone, and procarbazine; 6 cycles]. Of the 196 evaluable patients, 101 had mediastinal disease and 95 did not. Five-yr survival rates were 94% for patients treated with IF, 94% for those treated with EF, and 98% for those treated with IF + MOPP. However, the 5-yr disease-free survival rates were 90% for those treated with IF + MOPP, 72% with IF alone, and 66% with EF. Patients without mediastinal disease had better survival results than those who had mediastinal involvement at presentation. Pathology appeared to have no effect on treatment results of patients treated with radiotherapy alone. Patients with large mediastinal disease tended to relapse most often in the thoracic area, those without mediastinal disease relapsed most often in nonirradiated nodes of the upper and lower torso. Treatment of relapsed patients was more successful when the relapse was in a nodal area not previously treated with radiotherapy. Few complications of therapy occurred, and chemotherapy was well tolerated by most patients. These findings were used to construct a treatment plan for patients with Stage I or II Hodgkin's disease. (27 Refs)

24. RADIOTHERAPY VERSUS COMBINED MODALITY TREATMENT OF STAGE I AND II HODGKIN'S DISEASE.

Nissen NI, Nordentoft AM
Dept. Internal Medicine, Finsen Inst., Strandboulevarden 49, DK-2100 Copenhagen, Denmark
Cancer Treat Rep; 66(4):799-803 1982

In a multicenter study in which data from all Hodgkin's disease patients in Denmark have been registered since 1971, all patients with supradiaphragmatic Stage I and II disease (as confirmed by staging laparotomy) were randomized to receive radiotherapy (RT) to supradiaphragmatic and infradiaphragmatic lymph node regions (total nodal irradiation) or RT to a mantle field followed by six cycles of MOPP (chlormethine, vincristine, procarbazine and prednisone) combination chemotherapy (CT) (RT plus CT). Interim results up to July 1980, when 261 patients had entered the study, showed 28 failures among 128 patients in the total nodal irradiation group and four failures among 133 patients in the RT plus CT group (p less than 0.05). Stage II, nodular sclerosing or mixed cellular histology, and gross hilar/mediastinal involvement defined subsets of patients in the RT group with a relatively high relapse frequency. Salvage treatment of the relapsed patients has so far been good and there is as yet no difference in overall survival. However, longer observation time is needed before the cure rate can be evaluated with certainty. Two patients treated with RT alone and one treated with RT plus CT developed acute myeloid leukemia. (Author abstract) (11 Refs)

25. INTERGROUP HODGKIN'S DISEASE IN CHILDREN STUDY OF STAGES I AND II: A PRELIMINARY REPORT.

Sullivan MP, Fuller LM, Chen T, Fisher R, Fryer C, Gehan E, Gilchrist GS, Hays D, Hanson W, Heller R, Higgins G, Jenkin D, Kung F, Sheehan W, Tefft M, Ternberg J, Wharam M
Dept. Prediatrics, Univ. Texas System Cancer Center, M.D. Anderson Hosp. and Tumor Inst., 6723 Bertner Ave., Houston, TX, 77030
Cancer Treat Rep; 66(4):937-947 1982

The intergroup study of involved-field (IF) radiotherapy, IF radiotherapy plus mechlorethamine, vincristine, prednisone and procarbazine (MOPP) chemotherapy, and extended-field (EF) radiotherapy for treatment of Hodgkin's disease in children has assessed 305 patients. Of these, 279 were 'not ineligible' (no immediate cause for disqualification). Among 223 randomized patients, 144 were evaluable, 131 had documentation of complete or partial remission, 20 of the remitters relapsed, and 2 died. Among 62 nonrandomized patients with favorable presentations (unilateral upper neck, unilateral inguinal, or massive mediastinal disease), 29 had documented remission, 2 relapsed, and none died. Length of initial disease control (LIDC) was used to measure duration of response. LIDC was best in patients given IF plus MOPP, and 95% are disease free. EF was better than IF radiotherapy (p = 0.004). Of the disease characteristics prognostic for response (stage, histologic subtype, and presence of symptoms), only the last factor had a statistically significant effect on LIDC (p = 0.004). Ninety-six percent of the patients survive. Using criteria developed by the committee, 23% of the staging procedures reviewed were nonevaluable and 28% of the radiotherapy treatments were nonevaluable. The necessity for criteria for evaluation of staging and treatment is certain. Length of follow-up is too short for correlations of treatment with significant late effects and for relevant therapeutic recommendations. (Author abstract) (10 Refs)

26. MULTIDISCIPLINARY TREATMENT OF ADVANCED HODGKIN'S DISEASE BY AN ALTERNATING CHEMOTHERAPEUTIC REGIMEN OF MOPP/ABDV AND LOW-DOSE RADIATION THERAPY RESTRICTED TO ORIGINALLY BULKY DISEASE.

Young CW, Straus DJ, Myers J, Passe S, Nisce LZ, Lee BJ, Koziner B, Arlin Z, Kempin S, Gee T, Clarkson BD
Memorial Sloan-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021
Cancer Treat Rep; 66(4):907-914 1982

Ninety-one evaluable patients with advanced Hodgkin's disease (patients with Stages IIB, IIIB, or IV disease and patients with stage IIIA disease who were greater than 35 yr old or had mixed cellularity or lymphocyte depletion histology) received chemotherapy with MOPP (mechlorethamine, vincristine, prednisone and procarbazine) and ABDV (doxorubicin, bleomycin, dacarbazine and vinblastine) given in alternating months; radiation therapy (RT) (2,000 rad in 2 wk) was given during Month 5 of therapy to the previously untreated patients through ports that were limited to the originally bulky disease. The complete remission rates observed were: 88% in previously untreated patients, 69% in patients who had had prior RT but minimal chemotherapy, and 50% in patients who had had prior heavy chemotherapy. The actuarial relapse-free survival rates at 4 yr, for patients who had complete remission, are: previously untreated, 84%; prior RT, 70%; and prior heavy chemotherapy, 30%. The total actuarial survival rates at 5 yr for all 118 patients, evaluable and nonevaluable, who were entered in the study, are: previously untreated, 80%; prior RT, 57%; and prior heavy chemotherapy, 40%. (Author abstract) (15 Refs)

27. TREATMENT OF STAGE IIIA HODGKIN'S DISEASE.

Neely SM, Golomb HM
Box 420, 950 E 59th St., Chicago, IL, 60637
Cancer Treat Rep; 66(4):827-834 1982

Current treatment for Stage IIIA Hodgkin's disease consists of total nodal radiation therapy or a combination of radiation therapy (RT) and chemotherapy. In most series, 50%-65% of Stage IIIA patients receiving RT alone have a 5-year disease-free survival (DFS); when chemotherapy is added to RT, the percent of patients having a 5-year DFS is increased to 76%-89%. At the University of Chicago we have identified prognostic subgroups of patients, based on the extent of abdominal disease. Pathologic substage III2A patients treated with total nodal RT alone have a significantly lower 5-year DFS rate (54%) than do III2A patients treated with combined-modality therapy (100%; p = 0.015). Pathologic Substage III1A patients in the two treatment groups show no significant differences in 5-year DFS (p = 0.69). Given the potential for long-term morbidity following combined-modality therapy, we recommended that careful pathologic staging be used to determine which patients would benefit most from RT plus chemotherapy. Future treatment programs must be designed to minimize chronic morbidity while maintaining or improving cure rates. (Author abstract) (24 Refs)

28. RESULTS OF LUNG IRRADIATION FOR HODGKIN'S DISEASE PATIENTS WITH LARGE MEDIASTINAL MASSES AND/OR HILAR DISEASE.

Lee CK, Bloomfield CD, Levitt SH
Dept. Therapeutic Radiology, Univ. Hosp., Box 494 Mayo, 420 Delaware St., SE, Minneapolis, MN, 55455
Cancer Treat Rep; 66(4):819-825 1982

From 1970 to 1979, 130 patients with Hodgkin's disease were seen at the University of Minnesota and were treated with curative radiotherapy following surgical staging. Thirty-nine of the 130 patients had large mediastinal masses. Twenty patients with large mediastinal masses treated before 1975 received regular mantle-field irradiation. Our treatment technique was modified in 1975 because of frequent recurrences in the intrathoracic region in these patients. Between 1975 and 1979, patients with large mediastinal masses were treated with low-dose lung irradiation as an initial part of the mantle-field treatment. Nineteen patients were treated in this manner, and 16 of these 19 have been followed for greater than 24 months. Only one of the 16 patients has had a recurrence in the lung. We have not seen any serious acute or subacute pulmonary or cardiac complications after low-dose lung irradiation. The followup period is still too brief for the study of late complications. Analysis of our results with lung irradiation reveals excellent control of large mediastinal masses and significantly improved recurrence-free survival. (Author abstract) (26 Refs)

MUSCULOSKELETAL NEOPLASMS

29. STUDIES ON HISTOLOGIC CHANGES IN NORMAL AND NEOPLASTIC CELLS INDUCED BY HYPERTHERMIA ASSOCIATED WITH HIGH ENERGY IRRADIATION.

Santori FS, Folliero A, Ghera S
I Clinica Ortopedica, Universita di Roma, Roma, Italy
Boll Soc Ital Biol Sper; 57(23):2394-2400 1981

Effect of hyperthermia (HT) produced by microwaves associated with radiotherapy (RT) was evaluated histologically in normal and neoplastic cells. One patient with osteosarcoma received RT (4,000 rad) and HT (9 sessions) and another patient with telangiectatic sarcoma (TS) received RT (7,000 raf) and HT (4 sessions). Histologic examination of both patients showed that in the most distant tissues HT produced pathologic osseous tissue, areas of necrosis, and also were found active cellular and neoplastic elements. In tissue in direct contact with HT, the neoplastic cells were completely absent, and in their place were fibrous and connective tissue inducing repair, remnants of pathologic osseous tissue undergoing calcification, and absence of pathologic cellular elements. HT increased considerably the effect of RT on the neoplastic cells (massive necrosis was superior to the effect of RT alone). The effect of HT was reduced in distant tissue especially in the patient with TS, because the heat dissipation was even more pronounced due to the abundant vascularization. HT produced by microwaves associated with RT is effective in the therapy of superficial lesions. For deeper lesions RT should be associated with HT from other sources. (8 Refs) (In ITA)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

30. COMPUTERIZED TOMOGRAPHY AND COMPUTER-ASSISTED IRRADIATION PLANNING IN THE RADIOTHERAPY OF BRONCHOGENIC CARCINOMA: PRELIMINARY RESULTS.

Matthiessen W, Plumecke M, Koch K, Schumacher W
Innere Abteilung der Lungenklinik Heckeshorn, Krankenhaus Zehlendorf, Am Grossen Wannsee 80, D-1000 Berlin 39, W. Germany
Prax Klin Pneumol; 35(Suppl1):926-930 1981

The cure rate of radiotherapy for cases of inoperable bronchogenic carcinoma can be improved by improving radiation dose distribution. Improvement is made possible by the use of computerized sectional radiography of the thorax and an individual calculation of isodose curves using a computer program. Cooperation between radiotherapist, radiophysicist, and thoracic surgeon is required. Organotopographic data, risks, and tolerance of critical structures must be assessed. The method produces favorable results, justifying the time and technical demands involved. (4 Refs) (In GER)

31. LIFE PROLONGATION AND 5-YEAR SURVIVAL BY INTENSIVE IRRADIATION OF INOPERABLE LUNG CANCER.

Eichhorn HJ
Bereich Experimentelle und Klinische Strahlentherapie, Zentralinstitut fur Krebsforschung, Akademie der Wissenschaften der DDR, Berlin-Buch, E. Germany
Excerpta Med Int Congr Ser; 558:285-290 1982

The influence of intensive irradiation of inoperable lung cancer on 5-yr survival was studied in 123 patients treated with minimum tumor dose (MTD) of 3,500 centiGray (cGy) for 200 kilovolt (kV) therapy and in 1,046 patients treated with MTD of 5,000 cGy for telecobalt therapy (TCT). TCT-treated patients were divided into four groups: Group I composed of 77 patients (females, av age 62 yr), Group II 438 patients irradiated 'in time,' Group III 153 patients (av age 63 yr) with fully differentiated squamous-cell carcinoma, and Group IV 240 patients (av age 59.7 yr) presenting oat-cell carcinoma. Total results for the period when 200 kV x-rays were used and for the patients treated with TCT showed increasing survival over 1-3 yr in the high voltage-treated patients. Survival rates for the special groups are presented; 19-43% of patients survived 1 yr, 4-9% 3 yr, and 2.5-6.5% 5 yr. For Group IV the mean survival time was 10.55 mo; 6/240 patients lived longer than 5 yr after the start of treatment. Twenty-eight patients (25 males, 3 females, av age 63.5 yr) survived for at least 5 yr. Autopsy was performed on 17/24 patients who had died. Six of 17 patients still had tumors, 2 in the form of a local relapse and 4 as distant metastases. For the remaining 11 patients, cardiac insufficiency or pneumonia was given as the cause of death. (13 Refs)

32. TREATMENT OF PATIENTS WITH FAR ADVANCED LUNG CANCER.

Kas'ianenko IV, Pirogov AI, Muravskaia GV
No affiliation given
Vopr Onkol; 28(2):56-61 1982

The results of multicenter studies of the efficacy of various treatments of far advanced lung cancer (LC) are reviewed. Chemotherapy in combination with radiotherapy was used in 258 patients with inoperable LC; objective improvement was acieved in 60.5% of the patients. Av duration of survival was 12.4 mo, compared with 6.7 mo after exploratory thoracotomy alone. The 1-, 3-, and 5-yr survival rates in the patients with Stage III epidermoid LC subjected to surgery in combination with preoperative radiotherapy were 91%, 38%, and 20%, respectively, compared with 55.4%, 18.3%, and 14.5%, respectively, after surgery alone. Three-drug polychemotherapy was used in the treatment of 400 patients with inoperable LC: objective improvement was achieved in 17% of the patients, compared with 8% after monochemotherapy with cyclophosphamide. Of 600 patients subjected to radiotherapy in combination with monochemotherapy, 68% showed objective improvement, compared with 55% after radiotherapy alone. The 6-mo survivals were 66.8% and 58.5%, respectively. Split-course radiotherapy in combination with polychemotherapy produced objective improvement in 86.6% of the patients, compared with 72-73% after split-course radiotherapy in combination with monochemotherapy. (15 Refs) (In RUS)

33. COMBINED RADIO-CHEMOTHERAPY OF SQUAMOUS CELL CARCINOMA OF THE LUNG.

Illiger HJ, Frommhold H, Hartlapp JH, Grauthoff B, Schwabe KH
Medizinische Universitatsklinik, Sigmund-Freud-Strasse 25, D-5300 Bonn 1, W. Germany
Prax Klin Pneumol; 35(Suppl1):931-934 1981

The effectiveness of combined radiotherapy (RT) and chemotherapy (CT) was studied in patients with nonsmall-cell carcinoma of the lung. A total of 38 patients were treated, of whom 35 were evaluable. Twenty-six patients were free of metastases at the time of treatment; 25 of them had squamous-cell carcinoma (SCC). Local RT consisted of a total dose of 40-60 Gray delivered in individual doses of 1.5-4 Gray, 3-5 days/wk. CT consisted of 5-Fluorouracil (5-FU: 15 mg/kg body wt on 3 consecutive days) administered simultaneously with RT. 5-FU was administered iv as a bolus. Therapy was generally well tolerated. Side effects included vomiting (5 cases), diarrhea (3 cases), abdominal pain (2 cases), stomatitis (4 cases), fever (3 cases), fall in Hb levels (17 cases), fall in WBC count (28 cases), thrombopenia (10 cases), radiation erythema (3 cases), and local pulmonary fibrosis (8 cases). In no case did side effects require terminating therapy. Dosage was limited by stomatitis and myelosuppression. For patients with SCC the av survival time with combined therapy was 12 mo, compared with 10 for RT in previously reported studies. Four patients were alive at the time of this report, including one after 2 yr and three after 3 yr; all four were free of active disease. Results indicate that combined therapy does not adversely affect survival and is justified because of the potential radiosensitizing effect of 5-FU. (23 Refs) (In GER)

34. A CONTROLLED CLINICAL TRIAL OF MISONIDAZOLE IN THE RADIOTHERAPY OF PATIENTS WITH CARCINOMA OF THE BRONCHUS.

Saunders MI, Anderson P, Dische S, Martin WM
Marie Curie Res. Wing for Oncology, Regional Radiotherapy Center, Mount Vernon Hosp., Northwood, Middlesex HA6 2RN, England
Int J Radiat Oncol Biol Phys; 8(3/4):347-350 1982

A double-blind randomized controlled clinical trial of misonidazole (MIS) in the six fraction technique of radiotherapy for treatment of carcinoma of the bronchus was conducted. All patients had squamous and large-cell undifferentiated carcinoma of the bronchus and were unsuitable for surgery but had no evidence of metastases beyond the thorax. A total of 62 patients were randomized: 33 to receive MIS (27 males, 6 females), 29 the placebo (24 males, 5 females). Radiotherapy was completed in 61 patients: max tumor dose 3,500 rad given in 6 fractions over 18-20 days, treating 2x/wk. For all cases, the probability of survival at 6 mo was 78%, at 1 yr 42%, and at 2 yr 12%. No difference in survival was noted in patients given MIS compared with those given the placebo. In 52 patients, an estimate of the percentage regression of tumor 2 mo after the start of radiotherapy was possible. No difference was noted between the two groups and the percentage regression did not correlate with survival. There was no difference in the growth-delay time between MIS and the placebo or in the skin reaction according to randomization. Sensory peripheral neuropathy was observed in 14/62 patients: 12 given MIS, 2 the placebo. The peripheral neuropathy rate with MIS was 36% (12/33). Of the 54 patients who died, 28 had received MIS and 26 placebo. In the MIS group the thoracic tumor was the primary cause of death in 61% (17/28) compared to 85% (22/26) of the placebo patients. Thus, MIS did not give any significant advantage to patients treated using a six fraction technique of radiotherapy. Possible reasons for this failure are listed. (3 Refs)

35. ELECTIVE BRAIN IRRADIATION IN PATIENTS WITH SMALL-CELL CARCINOMA OF THE LUNG: PRELIMINARY REPORT.

Katsenis AT, Karpasitis N, Giannakakis D, Maragoudakis N, Kiparissiadis P
Radiotherapy Dept., Greek Anticancer Inst., Saint Savas Hosp., Athens, Greece
Excerpta Med Int Congr Ser; 558:277-284 1982

Thirty-five patients (33 males, 2 females) with small-cell carcinoma of the lung (SCCL) but no brain metastases were evaluated for effectiveness of elective brain irradiation. All patients were treated by chemotherapy and radiation therapy. Seventeen patients received prophylactic brain irradiation (PBI): a total dose of 4,000 rads during 3.5 wk. Objective response (complete and partial) was observed in 93.75% of the group with localized disease (LCD) and in 52.63% of those with extensive disease (EXD). In LCD patients, complete remission (CR) was achieved in 37.5% and partial regression (PR) in 56.25%. In the EXD patients, CR occurred in 10.52% and PR in 42.10%. No difference in the duration of remission was observed between the groups with and without PBI. In the group with PBI, brain metastases occurred in two patients 7 and 8 mo after completion of therapy; both patients belonged to the EXD group. In the group without PBI, brain metastases occurred between 3 and 6 mo, and in only one patient 7 mo after completion of therapy. Within the LCD group, survival was 6 mo in 87.5% of PBI-treated patients and 10 mo in 50.0%; for the patients not treated with PBI, survival was 6 mo in 75.0% and 10 mo in 50.0%. The corresponding survival in the EXD group was 6 mo in 44.4% and 10 mo in 11.1% of PBI-treated patients, and 6 mo in 40.0% and 10 mo in 10.0% of patients not treated with PBI. No serious complications related to irradiation of the primary site and the brain were observed. Hematological toxicity, related mainly to chemotherapy and severe enough to justify interruption of therapy, occurred in six patients; all of them were able to complete the treatment course after discontinuing therapy for a short period of time. Results confirm the efficacy of PBI in reducing incidence of brain relapses in SCCL. (19 Refs)

INSTRUMENTATION AND TECHNOLOGY

36. INTRAOPERATIVE IRRADIATION. A PILOT STUDY COMBINING EXTERNAL BEAM PHOTONS WITH 'BOOST' DOSE INTRAOPERATIVE ELECTRONS.

Gunderson LL, Shipley WU, Suit HD, Epp ER, Nardi G, Wood W, Cohen A, Nelson J, Battit G, Biggs PJ, Russell A, Rockett A, Clark D
Dept. Therapeutic Radiology, Mayo Clinic, Rochester, MN, 55901
Cancer; 49(11):2259-2266 1982

Intraoperative 'boost' dose electron beam therapy given in combination with 4,500-5,000 rad (45-50 Gray) external beam irradiation has been demonstrated as a practical therapeutic modality at the MGH. This procedure has been employed thus far in 58 patients; the results in the initial 36 are analyzed in detail in this paper. Thirty-four of the 36 patients had locally advanced lesions - unresectable, recurrent, or residual disease. Results achieved to date are in full agreement with our expectations: high radiation doses have been delivered to the primary intra-abdominal and pelvic tumors, excluding the sensitive structures from irradiation. This has been accomplished by a truly multidisciplinary effort comprising surgery, anesthesiology, OR nursing, administration, engineers, physicists, therapy technologists, and radiation therapists. Although follow-up is not yet sufficient to judge ultimate efficacy, acute and chronic severe morbidity is low and local control is good. There is justified enthusiasm for continuing the procedure. (Author abstract) (14 Refs)

37. CLINICAL EXPERIENCE WITH NITROIMIDAZOLES AS RADIOSENSITIZERS.

Dische S, Saunders MI, Anderson P, Stratford MR, Minchinton A
Marie Curie Res. Wing, Regional Radiotherapy Dept., Mount Vernon Hosp., Northwood, Middlesex HA6 2RN, England
Int J Radiat Oncol Biol Phys; 8(3/4):335-338 1982

Clinical experience with 248 patients given misonidazole (MIS) and 57 given desmethylmisonidazole (dmMIS) is reported. The pharmacokinetics of the two hypoxic cell sensitizers are reviewed and the relationship of the pharmacokinetic data to neurotoxicity discussed. dmMIS is well absorbed after po administration and good concentrations can be achieved in human tumors. Of 25 evaluable patients with various advanced primary or advanced recurrent or metastatic tumors given dmMIS, 17 showed complete tumor regression and 8 showed partial regression. Since a lower concentration of dmMIS than MIS reaches the cerebral spinal fluid, neurotoxicity was expected to be lower than with MIS. A high correlation was found between the area under the curve (AUC) relating plasma concentration with time and the incidence of neurotoxicity. Neurotoxicity was similar in patients given equal doses of dmMIS and MIS. With dmMIS, the most important factor was half-life, which correlated closely with neurotoxicity. Taking the AUC as a measure of tissue exposure, dmMIS is at least 2x as neurotoxic as MIS. A new radiosensitizing drug, Ro 03-8799, may have as high as a 5-to 10-fold advantage over MIS when radiosensitization is balanced against toxic effect. (5 Refs)

38. CLINICAL TRIALS OF WR-2721 WITH RADIATION THERAPY.

Blumberg AL, Nelson DF, Gramkowski M, Glover D, Glick JH, Yuhas JM, Kligerman MM
(c/o Kligerman) Dept. Radiation Therapy, Univ. Pennsylvania Sch. Medicine, 3400 Spruce St., Box 522, Philadelphia, PA, 19104
Int J Radiat Oncol Biol Phys; 8(3/4):561-563 1982

Phase I clinical trials of the radioprotector WR-2721 [S-2-(3-aminopropylamino) ethylphosphorothioic acid] were carried out in 65 patients receiving palliative irradiation. The objective was to determine the maximum tolerated dose (MTD) of the drug given as a single dose or in multiple doses over several weeks. Fifty patients were treated with a single dose ranging from 25-910 mg/m2 iv and 15 received multiple doses of 100 mg/m2, 1-5 fractions per wk or 170 mg/m2, 3-4 fractions per wk. Acute toxicity observed in both groups included nausea, vomiting, hypotension, hypertension, and somnolence. In the single dose trial, all cases of emesis were of sudden onset. Emesis began towards the end of infusion and stopped within 2 hr after the end of infusion. In the multiple dose trial, two cases of emesis occurred several hr after infusion; these symptoms resolved within 48 hr after the drug was discontinued. Two patients undergoing radiotherapy and one chemotherapy, beeing treated with the multiple dose protocol exhibited allergic reactions including rash, hyperthermia, and one case of anaphylactic shock. For the single dose therapy the MTD has not yet been established; 740 mg/m2 appeared to be well tolerated. Only one patient successfully received 910 mg/m2. (5 Refs)

39. TREATMENT OF SUPERFICIAL HUMAN CANCEROUS NODULES BY LOCAL ULTRASOUND HYPERTHERMIA.

Marchal C, Bey P, Metz R, Gaulard ML, Robert J
Centre Alexis Vautrin, RN 74 Avenue de Bourgogne, 54500 Vandoeuvre les Nancy, France
Br J Cancer; 45(Suppl5):243-245 1982

Thirty-one superficial tumors (10 otorhinolaryngological carcinomas, 3 melanomas, 6 mammary carcinomas, 4 basal cell carcinomas, 4 lung carcinomas, 2 rectal carcinomas, 2 cervical adenocarcinomas) in 21 patients were subjected to hyperthermia alone or in combination with radiotherapy or chemotherapy. Hyperthermia alone induced one regression in 12 cases. Ultrasound hyperthermia combined with radiotherapy or chemotherapy produced nine regressions in 15 cases with thermoradiotherapy and four regressions in 4 cases with thermochemotherapy. Good thermal tolerance, even at sites previously irradiated with high-dose radiation, was noted. Twenty per cent of the patients felt pain at a distance from the heated site, near bone and nerves. The sensation of pain was dependent on the direction of the incident ultrasound beam. Two cases of marked progressive necrosis were observed with the association of hyperthermia and radiotherapy. Ultrasound appears to be a good means of inducing localized hyperthermia in superficial tumors and studying different sequences of hyperthermia application with irradiation or chemotherapy. (5 Refs)

40. THE EFFECT OF THERMAL CONDUCTION DURING LOCAL HYPERTHERMIA INDUCED BY ULTRASOUND: A PHANTOM STUDY.

Hynynen K, Watmough DJ, Mallard JR
Dept. Bio-Medical Physics and Bio-Engineering, Univ. Aberdeen, Foresterhill, Aberdeen AB9 2ZD, Scotland
Br J Cancer; 45(Suppl5):68-70 1982

Phantom materials are described for determining temperatures achieved using ultrasound transducers. With phantom experiments, the effect of ultrasonic attenuation and thermal conduction can be studied. The temperature distributions during sonication, measured with small thermocouples, can be used to develop and test computer models to calculate the effect of thermal conduction if the thermal properties of the phantom are known. Thermal conduction appears to be important when focused ultrasound beams are used for the treatment of deep-lying tumors. (5 Refs)

41. TEMPERATURE DISTRIBUTION IN TISSUES SUBJECTED TO LOCAL HYPERTHERMIA BY RF INDUCTION HEATING.

Hand JW, Ledda JL, Evans NT
Medical Res. Council, Cyclotron Unit, Hammersmith Hosp., London W12 0HS, England
Br J Cancer; 45(Suppl5):31-35 1982

Tissue heating in the near field of a practical applicator consisting of a flat coil of three turns carrying a 27.12 megaHertz alternating current was examined. Temperature distributions were calculated such that temperatures within the tumor vol were 42 C or more. The radial variation in absorbed radiofrequency power density when the coil was scanned over the tissues at constant speed with an amplitude of +-5 cm is described. Steady state temperatures at several depths are shown as a function of radial distance for a small tumor (radius 1 cm, depth 2 cm). Because of the high blood flow assumed in the tumor, an unfavorable temperature distribution was produced. The temperature distribution for the larger two-zone tumor (2 cm radius x 2 cm depth), which was at a higher temperature than the skin, and at a given depth, greater than surrounding muscle, indicated that the absence of the poorly perfused central region resulted in a much smaller temperature differential between tumor and muscle. Variations in temperature with depth at three radial positions in and around the larger two-zone tumor are shown. Away from the tumor, peak temperature occurred close to the fat/muscle interface. At the center of the tumor, the peak occurred near the interface between inner and outer tumor regions. Forced cooling of the skin was simulated and steady state temperatures achieved in and around the larger tumor are described. Using the technique, peak temperatures were displaced to greater depths and the range of temperature was reduced. Considerable heat flux through superficial tissue associated with chilled water cooling was able to produce large temperature gradients in large tumors. (8 Refs)

PRE-CLINICAL STUDIES

42. INFLUENCE OF WR 2721 ON THE EFFICACY OF RADIOTHERAPY AND CHEMOTHERAPY OF MURINE TUMORS.

Clement JJ, Johnson RK
Experimental Therapeutics Section, Arthur D. Little, Inc., Cambridge, MA, 02140
Int J Radiat Oncol Biol Phys; 8(3/4):539-542 1982

Influence of WR 2721 in combination with radiation (0-3,000 rad) or antitumor agents was evaluated and possible therapeutic benefits of WR 2721 were estimated by comparison with normal tissue protection data. Two solid tumors, M5076 and Lewis lung carcinoma (LLC) were injected as 1:10 tumor breis into female C57Bl/6 x DBA/2 mice. The P388 lymphocytic leukemia ascites form was maintained ip in DBA/2 mice and was assayed in BALB/c x DBA/2 mice. WR 2721 at 500 mg/kg given 30 min prior to irradiation increased the survival curve (D0) values of ip P388 leukemia from 370 to 528 rad. WR 2721 also protected LLC from radiation. In general, WR 2721 reduced tumor regrowth delay at low radiation doses, and reduced tumor curability at higher radiation doses. WR 2721 protected mice against the toxic effects of cyclophosphamide (CYC) and melphalan (L-PAM). The LD50 for CYC and L-PAM in non-tumored mice was increased by 1.2 and 1.6 respectively, by pretreating mice with WR 2721 at doses of 300 or 500 mg/kg. The combination of 500 mg/kg WR 2721 with CYC against established M5076 tumor was no more effective than CYC alone at CYC doses of 210, 300, and 430 mg/kg. CYC at 614 mg/kg alone or in combination with WR 2721 was toxic. WR 2721 in combination with L-PAM was tested in early LLC and was found to be less toxic to tumor-bearing animals than L-PAM alone. WR 2721 protected systemic P388 leukemia from L-PAM at all L-PAM dose levels between 8.2-25 mg/kg. The therapeutic effectiveness of DNA binding agents in combination with WR 2721 was also evaluated in systemic P388 leukemia. At nontoxic levels the antitumor activity of etoposide and mitoxantrone given ip was not significantly altered by co-administration of 500 mg/kg WR 2721 given sc or ip. The combinations were, however, markedly more toxic. (9 Refs)

43. PROTECTIVE EFFECTS OF WR-2721 AGAINST RADIATION-INDUCED INJURY OF MURINE GUT, TESTIS, LUNG, AND LUNG TUMOR NODULES.

Milas L, Hunter N, Reid BO
Dept. Experimental Radiotherapy, Univ. Texas M. D. Anderson Hosp. and Tumor Inst., 6723 Bertner Ave., Houston, TX, 77030
Int J Radiat Oncol Biol Phys; 8(3/4):535-538 1982

The ability of S-2-(3-aminopropylamino) ethylphosphorothioic acid (WR-2721) to protect highly proliferative epithelium of jejunal crypts, testicular seminiferous tubuli, and low proliferative lung tissue of mice from acute radiation injury and the protection of murine fibrosarcoma microcolonies growing in the lung are described. WR-2721 (400 mg/kg, ip) given 30 min before irradiation (1,600 rad) of jejunum and 15 min before irradiation (1,400 rad) of testis, greatly protected jejunal crypts and testicular tubuli from radiation (RT)-induced cell depopulation. The mean number of cryptogenic cells/jejunal circumference of normal mice was approx 24,000, in irradiated mice 6.2 +-1 (standard error) and in WR-treated and irradiated mice 435 +-15. To determine whether WR-2721 can protect against RT-induced enhancement of lung nodules, 400 mg/kg was given to mice 30 min before local thoracic irradiation (LTI), which was followed 1 day later by iv injection with 2 x 10(4) methylcholanthrene-induced fibrosarcoma (FSA) cells. While WR-2721 had no influence on the number of nodules formed 14 days later, RT increased the number of nodules by greater than 4x the control value. Four days after iv injection with 10(4) FSA cells, mice were treated with 400 mg/kg WR-2721 and 30 min later exposed to 1,000 rad LTI. RT greatly reduced the number of FSA nodules in the lung and WR-2721 reduced the tumor-destructive effect of RT. The RT only and RT plus WR-2721 data were significantly different from the nonirradiated control data using the Mann-Whitney U test (p less than 0.001). Using the same test, the number of nodules in the WR-2721 plus RT group differed significantly from the RT only group (P less than 0.004). (19 Refs)

44. THE EFFECT OF RADIOSENSITIZER PRETREATMENT ON THE RESPONSE OF THE RIF-1 MOUSE SARCOMA TO CYTOTOXIC DRUGS.

Twentyman PR, Workman P
MRC Clinical Oncology and Radiotherapeutics Unit, Hills Road, Cambridge CB2 2QH, England
Int J Radiat Oncol Biol Phys; 8(3/4):611-613 1982

The effect of radiosensitizer pretreatment on the response of RIF-1 mouse sarcoma in hind limbs of C3H/He mice treated with various cytotoxic drugs was investigated. Radiosensitizers studied included misonidazole (MISO), metronidazole (MET), desmethylmisonidazole (DMM), Ro 07-1902, imidazole, the drug metabolism inhibitor SKF 525A, and benznidazole (BENZ). Cytotoxic drugs used included cyclophosphamide (CY), melphalan (L-PAM), lomustine (CCNU), and chlorambucil (CHL), each administered ip. Dose modifying factors (DMF) for the response of clonogenic cells in the tumors were determined. Significant enhancement by MISO was seen with CCNU and CHL, and by MET only for CHL. Little if any enhancement of L-PAM was produced by MISO. Enhancement of CHL by MISO was by approx a factor of 2. For CCNU, no significant enhancement of growth delay by MISO was observed. A DMF of 1.2 for MISO (2.5 millimoles/kg) enhancement of CCNU lethality was determined. MISO did not, however, significantly enhance WBC count at day 3 after treatment with CCNU. For CHL, acute lethality DMF was 1.7-1.9 and WBC count DMF was 2.2. Ro 07-1902 and BENZO (1.0 millimole/kg) were as effective as MISO in enhancing CHL. DMM (2.5 millimoles/kg) was less effective than the same dose of MISO. Imidazole (2.5 millimoles/kg) and SKF 525A (0.13 millimoles/kg) were as effective as 2.5 millimoles MISO/kg. (9 Refs)

45. RADIATION DOSE FRACTIONATION STUDIES WITH HYPOXIC CELL RADIOSENSITIZERS USING A MURINE TUMOR.

Hill RP
Physics Div., Ontario Cancer Inst., 500 Sherbourne St., Toronto M4X 1K9, Canada
Int J Radiat Oncol Biol Phys; 8(3/4):483-485 1982

Ability of metronidazole (MET), misonidazole (MIS), desmethylmisonidazol (DMM), SR 2508, and SR 2555 to sensitize the KHT sarcoma to radiation treatment was compared. Tumors were grown in the left rear leg of male C3H mice. Radiosensitizers were given in doses of 0.25-1.5 g/kg. Single radiation doses or two different daily fractionation schedules were used (4 fractions of 5 Gray each or 7 fractions of 3 Gray each). Tumor cell survival was determined with either an in vivo or in vitro colony assay. Radiation was administered locally for 60-70 min (MET), or 30-40 min (other drugs) after iv (SR 2508, SR 2555) or ip (MET, MISO, DMM) injection. After irradiation, tumor cell survival decreased as the drug dose increased in the range of 0-0.75 g/kg for all drugs and all schedules. A plateau was then reached and the amount of sensitization remained relatively constant thereafter. In the plateau region, the reduction in survival was similar for single doses and 5-Gray fractions, but was less for 3-Gray fractions. The plateau was lowest for MISO, DMM, and SR 2508 with the 4 x 5 Gray fractionation schedule, higher for SR 2555, and much higher for MET. With the 3 Gray fractionation schedule, SR 2508 appeared to be slightly less effective than MISO and DMM, and MET was the least effective of the drugs tested. These results suggest that DMM and SR 2508 should be superior to MISO as clinical sensitizers; however, toxicity in humans remains to be established. (6 Refs)

46. RADIOSENSITIZATION OF THE RIF-1 MURINE FLANK TUMOR BY DESMETHYLMISONIDAZOLE (RO 05 9963) DURING INTERSTITIAL BRACHYTHERAPY.

Bernstein M, Gutin PH, Deen DF, Weaver KA, Levin VA, Barcellos MH
(c/o Editorial Office) Dept. Neurological Surgery, 350 Parnassus Ave., Suite 807, San Francisco, CA, 94117
Int J Radiat Oncol Biol Phys; 8(3/4):487-490 1982

The interaction of desmethylmisonidazole (DMM) with interstitial radiation was investigated with a clonogenic cell assay as the endpoint. Removable I-125 sources were implanted at right angles to the outer surface of RIF-1 tumors grown in the flanks of C3H/He mice. DMM was administered at a constant infusion rate of 3.0 ml/24 hr via an ip PE-50 catheter that was surgically implanted just prior to implantation of the I-125 source. Tumor and blood levels of drug were determined after sacrifice with high performance liquid chromatography. Mean tumor levels of DMM were 63.9 ug/g +-29.3 ug/g. Plasma levels were generally significantly higher than tumor levels by 200-500%. DMM levels in the more necrotic tumor centers were consistently equal to or greater than the less necrotic peripheries, suggesting that DMM is absorbed by hypoxic cells. No appreciable cytotoxicity was noted when DMM was administered alone over 8-60 hr. Comparison of survival curves for tumor cells from mice treated with brachytherapy alone and those treated with brachytherapy and DMM demonstrated sensitization with a dose-modifying factor of 1.6. Thus, in the RIF-1 murine flank tumor model, DMM enhances cytotoxicity of interstitially-delivered low dose-rate radiation. Use of this combination for treatment of neoplasia is possible. (15 Refs)

47. ENHANCEMENT OF THE POTENTIATION OF RADIOTHERAPY BY PLATINUM DRUGS IN MOUSE TUMOR.

Douple EB, Richmond RC
Radiobiology Lab., Norris Cotton Cancer Center, Mary Hitchcock Memorial Hosp., Hanover, NH, 03755
Int J Radiat Oncol Biol Phys; 8(3/4):501-503 1982

Two ways to enhance potentiation of radiation therapy (RT) by cisplatin (CP) were studied in MTG-B mouse mammary carcinoma, implanted in the legs of female C3H mice. The first approach determined the efficiency of treatment sequencing and the second combined CP and RT with drugs that protect normal tissues from CP damage, thus allowing use of larger concentrations of CP. CP, diethyldithiocarbamate (DDTC), 5-thio-D-glucose (5-TG), and 5-2-(3 aminopropylamino)ethylphosphorothioic acid (WR-2721) were dissolved in normal saline and injected ip. Mice were anesthetized with pentobarbitol (60 mg/kg) 5 min prior to RT. X-irradiation was delivered locally to the tumor using a 2.0 cm diameter cone. The combination of CP and RT resulted in reduced TCD50 values with enhancement ratios greater than 1.3. Results suggested that greater potentiation occurred when CP was given 1 hr prior to RT compared to immediately following irradiation. CP 15 min before RT produced a more rapid tumor regression compared to CP injected immediately following RT. The addition of DDTC, WR-2721, or 5-TDG increased the CP LD50 values. Enhanced effects on the tumor occurred when 20 mg/kg CP and DDTC were combined with RT compared to tumor growth inhibition obtained with RT plus DDTC or CP plus DDTC. The marked effect on the radiation-derived TCD50 by CP administered prior to irradiation may be partly a result of a radiosensitization of hypoxic tumor cells by CP. (13 Refs)

48. TOXICITY OF DIETHYLAMINORESERPINE TO TUMOR CELLS: EFFECTS OF DRUG ALONE AND IN COMBINATION WITH RADIATION.

Lehnert S
Dept. Radiation Oncology, Montreal General Hosp., 1650 Cedar Ave., Montreal, H3G 1A4, Quebec, Canada
Int J Radiat Oncol Biol Phys; 8(3/4):505-509 1982

Cytotoxic effect of diethylaminoreserpine (DL-152) and the response of two transplantable tumors to combined treatment with radiation and DL-152 are described. KHT sarcoma was grown in male C3H mice, and the EMT6 mammary carcinoma was carried alternatively in BALB/c mice and in tissue culture. Changes in the surviving fraction of clonogenic tumor cells during the first 48 hr following DL-152 injection are shown. A fall in the surviving fraction of clonogenic cells for both tumors was noticeable, but the KHT had a larger reduction. Various doses of DL-152 were injected into tumor-bearing mice and the surviving fraction of clonogenic KHT cells was assayed 48 hr later. Significant reduction in surviving clonogenic tumor cells was found following doses as low as 5 mg/kg. The extent of reduction indicates that under these conditions, both hypoxic and aerated cells are killed by DL-152. Aerated KHT cells were completely resistant to 10(-4) M DL-152 over a 12-hr incubation period. Incubation of hypoxic cells in the same concentration of drug, however, reduced the surviving fraction to less than 10(-3), while 10(-5) M DL-152 was sufficient to kill 90% of hypoxic KHT cells over the same period. The use of DL-152 in conjunction with radiation was studied using im KHT tumors and growth delay as an index of response. The most effective protocol was found to be DL-152 injected shortly after irradiation. The relationship of duration of growth delay dose of DL-152 when the latter was given immediately after a given dose (1,350 rad) of irradiation is shown. It is concluded that DL-152 has a concentration-dependent specific toxicity for hypoxic cells and that the drug may require a hypoxic milieu to manifest toxicity. (12 Refs)

49. ULTRASONIC TREATMENT OF EXPERIMENTAL ANIMAL TUMOURS.

Kremkau FW
Dept. Diagnostic Radiology, Yale Univ. Sch. Medicine, New Haven, CT, 06510
Br J Cancer; 45(Suppl5):226-232 1982

Studies on the effects of ultrasound on several solid tumors in experimental animals have indicated that tumor growth rates can be reduced. These data are generally consistent with a thermal mechanism of action. Application of combined ultrasound and x-irradiation have shown that with some experimental animal tumors the radiation dose required to locally control 50% of the tumors can be reduced by ultrasound. These results were also consistent with a thermal mechanism of action hypothesis. Fractionated x-irradiation was not enhanced as much as single dose. Pulsing the ultrasound with the same time-av intensity resulted in the same radiosensitivity enhancement. The combined effects of ultrasound and cancer chemotherapy drugs have been studied in mouse leukemia. The treatment was applied in vitro with cells in suspension. Subsequent to treatment, the cells were inoculated into host mice and survival was monitored. Cytotoxic action of 5 of 10 drugs studied was enhanced by ultrasound. A thermal mechanism of action apparently was not involved. Cavitation in the suspension probably played a role in the cytotoxic enhancement. Experimental data are consistent with the concept that ultrasound causes rapidly reversible cell damage which, in the presence of cytotoxic drugs, is not so readily reversed and results in significant loss of lethal potential of the malignant cells to the host. (Author abstract) (15 Refs)

50. EXPERIMENTAL STUDIES ON REGIONAL THERAPY OF URINARY BLADDER CANCER. 3. EFFECTS OF HYPERTHERMIC IRRIGATION ON TRANSPLANTED BLADDER TUMORS IN RABBITS.

Nemoto R, Mori H, Iwata K, Abe R, Kato T, Harada M
Dept. Urology, Tsukuba Univ. Sch. Clinical Medicine, Niihara-gun, Ibaraki Prefecture, Japan
Nippon Hinyokika Gakkai Zasshi; 72(9):1129-1137 1981

Hyperthermic irrigation of the urinary bladder was performed in 54 male Japanese white rabbits bearing transplanted V2 carcinomas of the urinary bladder. Three indwelling venous catheters were inserted through a cystostomy into the lower portion of the bladder wall, extending about 2-3 mm into the lumen. Two of the catheters were used as outlets for the warmed saline soln entering the third catheter. Differences between tumor size in the experimental and control groups, effects of duration of irrigation on tumor size, changes in body wt due to irrigation, and pathohistological changes occurring in the bladder tumors were investigated. Av tumor size (length x width) 2 wk after treatment in control, normal thermia (36-38 C), and hyperthermia (42-44 C) groups were 395 +-31 mm2, 385 +-55 mm2, and 62 +-11 mm2, respectively; tumor size in the hyperthermia group was significantly (p less than 0.005) less those in the other two groups. Death due to the bladder tumors occurred by wk 7 in the control group and by wk 10 in the hyperthermia group. Body wt of the rabbits given hyperthermia increased from day 7-42 after transplantation (treatment began on day 3); body wt increased in the control rabbits from day 7 and decreased from day 28-42. Histologically, degeneration of tumors cells and infiltration of plasma cells and lymphocytes in the area of the tumor was observed in the hyperthermia group. The findings suggested that the hyperthermic irrigation of the urinary bladder can prevent tumor growth and prolong survival time with minimal damage to normal bladder mucosa. (20 Refs) (In JPN)

51. ALTERATION OF THE IMMUNE REACTIONS BY WHOLE-BODY AND LOCAL MICROWAVE HYPERTHERMIA IN NORMAL AND TUMOUR-BEARING ANIMALS. REVIEW OF OWN 1976-1980 EXPERIMENTS.

Janiak M, Szmigielski S
Centre for Radiobiology and Radioprotection, Warsaw, Poland
Br J Cancer; 45(Suppl5):122-126 1982

Alteration of both non-specific and specific immune functions in normal and tumor-bearing animals exposed to thermal doses of microwave radiation (microwave hyperthermia: MwH) are reviewed. In general, whole-body MwH led to inhibition of various immune reactions, while local heating of tumor stimulated the function of macrophages and/or lymphocytes in tumor-bearing hosts. Usually, daily sessions of 2,450 or 3,000 megaHertz whole-body microwave radiation elevated rectal temperature by 3-4 C and inhibited growth of sarcomas 180 and L1. Later studies showed that although whole-body MwH led to temporary regression of sarcoma L1, the number of lung metastases was increased. Mice irradiated prior to tumor transplantation showed increased tumor growth and an increased incidence of spontaneous lung metastases. Diminished resistance to the formation of lung nodules could be adoptively transferred by bone marrow cells, but not by spleen or thymus cells, obtained from MwH-treated donors. MwH also inhibited in vivo phagocytosis and reactivity of immunocompetent T-lymphocytes. Irradiation of neoplastic tissue in tumor-bearing rats inhibited tumor growth and stimulated cell-mediated immunity. (14 Refs)

52. TEMPERATURE DISTRIBUTIONS IN TISSUES DURING LOCAL HYPERTHERMIA BY STATIONARY OR STEERED BEAMS OF UNFOCUSED OR FOCUSED ULTRASOUND.

Lele PP, Parker KJ

Lab. Medical Ultrasonics, Massachusetts Inst. Technology, Cambridge, MA, 02139

Br J Cancer; 45(Suppl5):108-121 1982

Temperature distributions resulting from insonation with stationary or steered beams of unfocused or focused ultrasound were measured in tissue-equivalent phantom, beef muscle in vitro, dog muscle mass, and transplanted murine tumors in vivo. Arrays of four to six thermocouples steeped through the vol of interest under computer control were used to measure the steady-state temperatures at 600 to 800 locations in both in vitro and in vivo experiments. The results were confirmed in spontaneous tumors in dog patients using fewer multi-thermocouple probes. Plane wave ultrasound was found to result in spatially non-uniform hyperthermia even in superficial tumors. The region of maximum temperature rise was small in extent and was situated at a depth which varied in the different models from 0.5 to 1.0 cm. Neither its location nor its extent could be varied by spatial manipulations of the transducer or by changing the insonation parameters except the ultrasonic frequency. A second region of hyperthermia was produced at depth by reflective heating if an ultrasonically reflective target, such as bone or air-containing tissue, was located below the target tissue. On the other hand, using available steered, focused ultrasound techniques, tumors (whether situated superficially or at depth) could be heated to a uniform, controllable temperature without undesirable temperature elevation in surrounding normal tissues. The use of steered, focused ultrasound permits deposition of energy to be tailored to the specific needs of each individual tumor. The small size of the focal region enables heating of tumors even when located near ultrasound reflecting targets. (Author abstract) (11 Refs)

REVIEWS

53. CLINICAL TRIALS OF HYPOXIC CELL SENSITIZERS.

Phillips TL, Wasserman TH, Stetz J, Brady LW

Dept. Radiation Oncology, Univ. California Sch. Medicine, San Francisco, CA, 94143

Int J Radiat Oncol Biol Phys; 8(3/4):327-334 1982

Phase I, II, and III clinical trials of misonidazole (MIS), a hypoxic cell sensitizer, are reviewed. Phase I studies established that MIS is absorbed well orally and that peripheral neuropathy is the major dose limiting toxicity. Efficacy studies in patients with multiple skin lesions or lung metastases have demonstrated that in each case, the response is greater in patients given MIS. Fourteen Phase II studies of MIS have been completed and three are ongoing. Closed studies involved gliomas, head and neck tumors, brain metastases, hemibody irradiation, advanced lung tumors, sarcoma/melanoma, bladder tumor, recurrent gliomas, advanced head and neck cancer, liver metastases, cancer of the esophagus, glioma (neutrons), and cancer of the cervix. In a limited number of patients in the Phase II studies, response was equal or better than that of historical controls. One large Phase III study has been completed using MIS in the treatment of malignant gliomas. To date, median survival has ranged from 40-48 wk with no significant differences between the protocol arms at the last date of analysis; further analysis and longer follow-up is necessary. Seven open Phase III studies are described. Again, no significant differences have yet been noted in any of the studies. In a total of 466 patients entered in Phase II studies and evaluated for toxicity, 28% experienced peripheral neuropathy and 7% CNS toxicity. The benefits of MIS are expected to affect only a few patients. However, Phase III studies are needed in a variety of tumor sites and histologies. (32 Refs)

AUTHOR INDEX WITH CITATION NUMBERS

Abe R 50
Anderson P 34
Anderson P 37
Arlin Z 26
Asbell SO 7
Barcellos MH 46
Bartal A 8
Bartles DM 6
Battit G 36
Bauke G 14
Bell PR 13
Bernstein M 46
Bey P 39
Biggs PJ 36
Black B 16
Bloom HJ 9
Bloomfield CD 22
Bloomfield CD 28
Blumberg AL 38
Brady LW 53
Brauner R 5
Bush RS 16
Butler JJ 23
Chen T 25
Chin HW 3
Clark D 36
Clarkson BD 26
Clement JJ 42
Cline WA 11
Cohen A 36
Cohen Y 8
Coleman M 22
Coltman CA 20
Concannon J 7
Cridland S 17
Cummings BJ 16
Czernichow P 5
Dar'ialova SL 15
Dawes PJ 18
DePersio EJ 20
Deen DF 46
Dische S 34
Dische S 37
Dixon DO 20
Douple EB 47
Eichhorn HJ 31
Epp ER 36
Evans NT 41
Fischer JJ 4
Fisher R 25
Folliero A 29
Ford HT 1
Frommhold H 33
Fryer C 25
Fuller LM 23
Fuller LM 25
Gaulard ML 39
Gee T 26
Gehan E 25
George F 7
Ghera S 29
Giannakakis D 35
Gilchrist GS 25
Glick JH 38
Glicksman AS 22
Glidewell OJ 22
Glover D 38
Golomb HM 27
Gottlieb AJ 22
Gramkowski M 38
Grauthoff B 33
Gregorie HB 6
Grontoft O 12
Grozea PN 20
Gunderson LL 36
Gutin PH 46
Hagemeister FB 23
Haim N 8
Hallet C 17
Hand JW 41
Hanson W 25
Harada M 50
Hartlapp JH 33
Hays D 25
Heckenthaler W 19
Heller R 25
Hellman S 21
Hendry WF 9
Henk JM 18
Higgins G 25
Hill RP 45
Hinshaw W 11
Hohenberg G 19
Holland JF 22
Horwich A 2
Hunter N 43
Huttner J 14
Hynynen K 40
Illiger HJ 33
Iwata K 50
Janiak M 51
Jenkin D 25
Johnson RK 42
Johnston DA 23
Jones SE 20
K pp DS 4
arakulov RK 15
Karpasitis N 35
Kas'iannenko IV 32
Kato T 50
Katsenis AT 35
Kempin S 26
Kiparissiadis P 35
Kirkwood JM 4
Kiseleva ES 15
Kligerman MM 38
Koch K 30
Koefoot RB 11
Koziner B 26
Kremkau FW 49
Kung F 25
Ledda JL 41
Lee BJ 26
Lee CK 28
Lehnert S 48
Lele PP 52
Lemerle J 5
Leutzinger C 4
Levin VA 46
Levitt SH 28
Lommatzsch PK 14
Mallard JR 40
Maragoudakis N [illegible]
Marchal C 39
Marcial VA 7
Markesbery W 3
Marks RD 6
Martin WM 34
Maruyama Y 13
Maruyama Y 3
Matthiessen W 30
Mauch P 21
Mekori T 8
Metz R 39
Milas L 43
Minchinton A 17
Minchinton A 37
Mohilever J 8
Moore JL 18
Mori H 50
Muravskaia GV 32
Myers J 26
Nardi G 36
Neely SM 27
Nelson DF 38
Nelson J 36
Nemoto R 50
Nisce LZ 26
Nissen NI 22
Nissen NI 24
Nordentoft AM 24
North L 23
Pajak TF 22
Parker EF 6
Parker KJ 52
Parsons J 7
Passe S 26
Paterson IC 18
Paulson DF 11
Pelevina II 15
Phillips TL 53
Pirogov AI 32
Plumecke M 30
Poliakov PIu 15
Prioleau WH 6
Prout GR 10
Rafla S 22
Rappaport R 5
Rauth AM 16
Reid BO 43
Renier D 5
Richmond RC 47
Risberg B 12
Robert J 39
Robinson E 8
Rockett A 36
Russell A 36
Saenko AS 15

Santori FS 29
Saunders MI 34
Saunders MI 37
Schumacher W 30
Schwabe KH 33
Sealy R 17
Sheehan W 25
Shipley WU 36
Shullenberger C 23
Skeet RG 9
Sorrenti V 16
Statford M 17
Stenson S 12
Stephani S 11
Stetz J 53
Stratford MR 37
Straus DJ 26
Stutzman L 22
Suit HD 36
Sullivan JA 23
Sullivan MP 25
Szmigielski S 51
Tefft M 25
Ternberg J 25
Thibaud E 5
Thomas GM 16
Twentyman PR 44
Uro-Oncology Re 11
Van Nagell JR 13
Velasquez WS 23
Vinciguerra V 22
Vlock DR 4
Wallace DM 9
Wasserman TH 53
Watmough DJ 40
Weaver KA 46
Welker KW 14
Westholm B 12
Wharam M 25
Whitmore WF 10
Williams A 17
Wood W 36
Workman P 44
Ydrach AA 7
Yoneda J 13
Young AB 3
Young CW 26
Yuhas JM 38
Zucker JM 5

Keep Up with the Cancer Literature

Each Month You Can Receive Abstracts Covering Your Specialty Area

- This convenient service — called Auto SDI* — is as near as your nearest biomedical library. Discuss your research interests with the librarian who will design an appropriate search strategy.
- Abstracts of the latest published literature are searched automatically each month and those related to your interests are delivered to you on a regular basis.
- The abstracts you receive are selected from more than 4,000 monthly entries made into CANCERLIT — the extensive cancer literature data base of the National Cancer Institute.

Talk With Your Librarian About the Auto SDI Service TODAY.

---

*Auto SDI stands for Automatic Selective Dissemination of Information. It is a service provided to you, at minimal cost, by the International Cancer Research Data Bank (ICRDB) — a part of the National Cancer Institute.

INTERNATIONAL CANCER RESEARCH
DATA BANK

Compilation of Experimental Cancer Therapy Protocol Summaries

April 1982
Sixth Edition

COMPLIMENTARY COPIES
NOW AVAILABLE

CONTENT

This document contains summaries of over 1200 open experimental clinical cancer therapy protocols from countries around the world.

Open protocols are arranged in sections according to the specific type of cancer.

Protocols closed in 1981 are listed by title, number, and investigator in a separate section.

INDEXES

Tumor index
Agent/Modality index
Protocol identification number index

Mail to:
Compilation Request
ICRDB Program
National Cancer Institute
Westwood Building Room 10A18
Bethesda, Maryland 20205

Request for 1982 COMPILATION
(Print Clearly for use as mailing label)

Name: ______________________

Address: ______________________

____

City/State/Zip: ______________________

Country: ______________________

CANCER INFORMATION? CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · CANCERLINE · JUST MENTION OUR NAME

Mention CANCERLINE to your librarian and the world's foremost collection of cancer information is at your disposal. With the help of this computerized data system, you can obtain information on the following:

Cancer Literature

The literature date base, **CANCERLIT**, allows you to survey more than 3,000 biomedical journals for information on your topic of interest. Your search will also alert you to meeting proceedings, monographs, and books published in that area. Informative abstracts averaging 200 words are provided with each citation;

Current Cancer Research

The data base **CANCERPROJ** allows you to retrieve descriptions of current work in any cancer research area. The descriptions, which state research objective, methodology, and experimental results, are supplied for projects underway in 77 countries around the world.

Cancer Therapy Protocols

The **CLINPROT** section of CANCERLINE is designed primarily for clinicians. It provides detailed summaries of currently active experimental protocols for any cancer site, agent, or type.

Ask your biomedical librarian about CANCERLINE.
CANCERLINE is sponsored by the International Cancer Research Data Bank—a program of the National Cancer Institute.

CANCERLINE

☆U.S. GOVERNMENT PRINTING OFFICE: 1982-381-847:2[illegible]2

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT15/82/11

NCI/ICRDB/CT15 82/11

PB82-939011

ICRDB CANCERGRAM

CLINICAL TREATMENT OF CANCER

Radiation Therapy

SERIES CT15 No. 82/11

NOVEMBER, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB) PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstracts of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicated by the above title, is sent to researchers working in this area. These researchers are identified on the basis of the description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy *If this Cancergram is useful and valuable, please send your comments to the CIDAC address below, since future editions depend on user satisfaction and user needs:*

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr., M.D.

NEWARK PUBLIC LIBRARY
DEC 3 1982
U. S. GOVT. PUBS.
DEPOSITORY 376

In this issue:

- BREAST NEOPLASMS 1-3
- CENTRAL NERVOUS SYSTEM NEOPLASMS 4-7
- DIGESTIVE NEOPLASMS 8-14
- GENITOURINARY NEOPLASMS 15-16
- GYNECOLOGIC NEOPLASMS 17-20
- HEAD AND NECK NEOPLASMS 21-35
- HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS 36-40
- MUSCULOSKELETAL NEOPLASMS 41
- RESPIRATORY AND CARDIOVASCULAR NEOPLASMS 42-48
- PRE-CLINICAL STUDIES 49-51
- REVIEWS 52-56

BREAST NEOPLASMS

1. RADIATION THERAPY WITH OR WITHOUT TUMORECTOMY AS TREATMENT FOR OPERABLE BREAST CANCER.

Calle R, Pilleron JP
Institut Curie, 75231 Paris, France
Rev Med Brux; 3(4):197-200 1982

Tumorectomy followed by radiation therapy constituted the treatment used for 233 patients who had infiltrating breast carcinomas less than or equal to 3 cm but no clinically pathologic nodes. Radiation therapy alone constituted the treatment for 896 patients who had larger tumors (greater than 3 cm to less than or equal to 7 cm) or who had clinically significant lymph nodes. Surgery was reserved for locoregional recurrence. At 5 yr, 207/233 tumorectomy patients were alive, without any signs of recurrence; of those still alive, 196 had not undergone mastectomy. At 10 yr, 120 tumorectomy patients were available for follow-up, were alive, without signs of recurrence; of those still alive, 82 had not undergone mastectomy. At 5 yr, 628/896 irradiation patients were alive, without any signs of recurrence; of those still alive, 299 had not undergone mastecto-

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20.3173/2:

my. At 10 yr, 376 irradiation patients were available for follow-up, among whom 173 were still alive, without any signs of recurrence; of those still alive, 91 had not undergone mastectomy. Only 20% of patients can be treated with the protocol of tumorectomy followed by irradiation, but it is recommended since the survival rate is fairly high and needless mastectomy is avoided. (6 Refs) (In FRE)

2. POSTOPERATIVE RADIOTHERAPY IN CANCER OF THE BREAST: EXPERIENCE AT THE JULES BORDET INSTITUTE.

Balikdjian D
Service de Radiotherapie, Institut Jules Bordet, Brussels, Belgium
Rev Med Brux; 3(4):205-207 1982

Among 787 patients receiving radiation therapy after surgery for breast cancer, the surgical procedure used for 419 was modified radical mastectomy; 9 out of the patients had radical mastectomy, and 344 had simple mammectomy. After 5 yr, the overall survival for all clinical stages of the tumor was 65%, and the recurrence-free survival was 55%. Regional recurrence occurred in only 50 of the cases. (no Refs) (In FRE)

3. COMPARISON OF ADJUVANT POSTOPERATIVE RADIOTHERAPY AND MULTIPLE-DRUG CHEMOTHERAPY (CMF-VP) IN OPERABLE BREAST CANCER PATIENTS WITH MORE THAN FOUR POSITIVE AXILLARY LYMPH NODES.

Chu AM, Kiel K
Dept. Therapeutic Radiology, Tufts-New England Medical Center, 171 Harrison Ave., Boston, MA, 02111
Cancer; 50(2):212-218 1982

With the advent of adjuvant chemotherapy in 1974 for early operable breast cancer at Massachusetts General Hospital, 41 patients with greater than or equal to four lymph nodes positive in their axillary dissection received a 2 yr course of the modified Cooper regimen (S + CH) between March 1974 and June 1976. The actuarial disease-free survival was found to be comparable to cyclophosphamide, fluorouracil and methotrexate as reported by Bonnadonna. No consistent randomization with a control group was possible. Since postoperative radiotherapy has been proven to decrease the incidence of local recurrence but does not affect survival; it was believed that this group should serve as an adequate control. Sixty patients with greater than or equal to four positive axillary lymph nodes in their axillary dissection who were given postoperative radiotherapy to the chest wall and draining lymphatics (S + RT) in 1973 and 1974 at the same institution were retrospectively analyzed and compared to the above group. Relatively little significant difference in survival and disease-free survival curves was found. At 48 mo, there was 72% and 58% survival for the S + RT and S + CH groups, respectively. When subgrouped according to age, those patients less than 49-yr-old had a 48-mo disease-free survival of 65% and 49% for S + RT and S + CH groups, respectively ($p = 0.25$). No significant difference was noted in the post menopausal group. In both groups, patients with greater than 50% positive axillary lymph nodes exhibited a poor prognosis. (Author abstract) (27 Refs)

CENTRAL NERVOUS SYSTEM NEOPLASMS

4. HIGH-DOSE RADIATION THERAPY WITH LOW-DOSE (PULSED) BCNU IN MALIGNANT GLIOMAS: AN EASTERN COOPERATIVE ONCOLOGY GROUP (ECOG) REPORT.

Salazar OM, VanHoutte PJ, Bennett JM, Rubin P, Wheeler KT
Dept. Radiation Oncology, Univ. Maryland at Baltimore, 22 South Greene St., Baltimore, MD, 21201
Int J Radiat Oncol Biol Phys; 8(5):915-919 1982

High-dose radiation therapy in combination with pulsed low doses of carmustine (BCNU) was studied in 12 patients (9 males, 3 females) with histopathologically confirmed malignant gliomas of the supratentorial brain regions. Details on the clinical course and therapy given for all patients are shown. Five patients were with Astrocytoma Grade III and seven with Astrocytoma Grade IV. The mean age for the former was 39 yr and for the latter group 52 yr. Most patients received prescribed radiation doses with the exception of a patient who died of disease midway through therapy. The av dose of BCNU given to the entire group was 94%. Radiation was well tolerated. No patient experienced pulmonary fibrosis or liver disfunction as a result of BCNU. The main effects of the drug were on hematologic parameters. No fatal or life-threatening hematologic toxicities were observed and only one patient exhibited severe leukopenia of 1,600 which recovered in 3 wk. The median survival for all patients was 80 wk. A significant difference was observed in median survival between patients with Astrocytoma Grade IV (30 wk) and patients with Astrocytoma Grade III (210 wk). All patients with Grade IV lesions died and four of the five patients with Astrocytoma Grade III were alive without evidence of disease. Three autopsies were performed among the eight deaths in the patients. In all patients tumor recurrence was observed at the initial locus without evidence of radiation-induced brain damage. (16 Refs)

5. TREATMENT EXPERIENCE. GLIOBLASTOMA MULTIFORME TREATED WITH 15 MEV FAST NEUTRONS.

Hershkovic A, Ornitz RD, Shell M, Rogers CC
Div. Radiation Oncology, Duke Univ. Medical Center, Durham, NC, 27710
Cancer; 49(12):2463-2465 1982

Thirty-one patients with glioblastoma multiforme treated at the Middle Atlantic Neutron Therapy Association (MANTA) are reported. All but one patient completed a prescribed course of treatment, and most demonstrated clinical improvement. Mean survivals of 11.1 mo for Grade III neutron-treated patients and 6.8 mo for Grade IV patients were obtained. Persistent tumor in seven of eight patients was confirmed by biopsy or autopsy. (Author abstract) (16 Refs)

6. LONG TERM RESULTS OF CEREBELLAR ASTROCYTOMA WITH SPECIAL REFERENCE TO OPERATIVE PROCEDURE AND RADIOTHERAPY.

Tsuchida T, Fukuda M, Tanaka R
Dept. Neurosurgery, Brain Res. Inst., Niigata Univ., 1-754 Asahichodori, Niigata 951, Japan
Neurol Med Chir (Tokyo); 22(2):117-124 1982

Twenty-eight patients with cerebellar astrocytoma were treated between 1947 and 1980. There was one surgical death and two additional patients who died prior to posterior fossa surgery and were confirmed to have a cerebellar astrocytoma by autopsy. Thus, 25 patients were available for follow-up analysis. The surgical procedures, histological findings and the efficacy of radiation therapy as well as the clinical symptoms and signs have been presented. Thirteen patients were under 15 years of age and 15 were over 16 years old. Eight patients died in the period from 9 months to 9 years after posterior fossa surgery. Out of a total of 28 patients, 17 have survived for 1 to 26 years, and 13 of the 17 survivors have survived 10 to 26 years after their tumors had been operated on. Among 15 patients who received partial excision of the tumor, eight are surviving and seven of them were irradiated. Four of the five patients who underwent subtotal excision are surviving. All of the five patients of total excision are surviving. All of the living patients were found to be in excellent or good neurological condition. Radiation therapy was performed on 18 patients after posterior fossa surgery. Among 17 patients whose tumors were not totally excised during surgery, 8 of 12 patients with radiation therapy are surviving, while only 1 of 5 patients without radiation therapy are surviving. Sixteen out of 19 patients whose tumors were diagnosed as piloid, fibrillary or spongioblastic astrocytoma histologically are surviving. However, only one of six patients whose tumors were diagnosed as protoplasmic, diffuse-type or anaplastic astrocytoma have survived. It is advocated that every effort should be made to extirpate the solid portion of the tumor as much as possible. However, if the tumor has invaded deeply into the brain stem or the floor of the fourth ventricle, surgical intervention should be stopped to avoid postoperative morbidity. Postoperative radiotherapy seems to have some effect on the prevention of recurrence of the tumor. (21 Refs) (In JPN)

7. EXTRACRANIAL METASTASES FROM INTRACRANIAL MENINGIOMA: A REPORT OF 2 CASES AND REVIEW OF LITERATURE.

Kinomoto H, Iwasaki Y, Nakagawa Y, Itoh T, Tashiro K, Abe H, Tsuru M, Higuchi M, Kaneda K
Dept. Neurosurgery, Univ. Sch. Medicine, Sapporo, Hokkaido, Japan
No Shinkei Geka; 10(3):319-326 1982

We report on two cases of intracranial meningioma with extracranial metastases, one of which is multiple, another, solitary, out of 190 meningiomas experienced in our Department for the past 22 years. Case 1: A 35-yr-old man developed headache and was diagnosed as the cerebellar tentorial meningioma, which was thought to be totally removed and postoperative course was uneventful. Six yr later he noticed limitation of neck movement, followed by chest pain. Multiple abnormal shadows were detected on roentgenogram of vertebra and the chest which were diagnosed as the metastatic meningioma by biopsy. He underwent irradiation therapy for whole spine and the lung. Pathological fracture occurred in the neck of the left femur in July 1979, left humerus in October. He underwent total hip replacement and fixation of the humerus. Bony specimen revealed the metastatic meningioma. Recurrence of the intracranial meningioma with invasion to the base of the skull were found on CT scan in April 1980, for which irradiation therapy was also given. He returned to his former job recently. Case 2: A 35 yr old man developed left hemiparesis in March 1971, and he was operated on for right parasagittal meningioma in July 1975. He underwent three more operations, all of which were diagnosed as the right falx meningioma. He complained of radiating pain in the back and the destruction of the ninth thoracic vertebra was recognized on tomogram. At this time he was unable to walk. In January 1980, surgical decompression was attempted, but most of the tumor was not removed because of the profuse bleeding. Surgical specimen at that operation was verified as a metastatic meningioma. Following irradiation therapy, the tumor was successfully removed. Postoperatively he was able to walk with a cane. Histological diagnoses of both cases were the hemangiopericytoma type of the angioblastic meningioma. We emphasize that irradiation therapy is effective for the extracranial metastatic meningioma. (26 Refs) (In JPN)

DIGESTIVE NEOPLASMS

8. ENDOSCOPIC PLACEMENT OF A MODIFIED TYGON TUBE PROSTHESIS FOR INTRALUMINAL IRRADIATION OF CARCINOMA OF THE ESOPHAGUS WITH IRIDIUM 195 (MEETING ABSTRACT).

Trujillo NP, Patel HR, Ling C, Wechsler-Jentzsch K, Rogers CC
George Washington University Hospital, Washington, DC
Gastrointest Endosc; 28(2):148 1982

There is a high incidence of recurrence of esophageal cancer following external beam irradiation. For recurrence with dysphagia, bougienage or placement of an esophageal prosthesis are alternative palliation. We have developed a means of palliation by locally irradiating biopsy proven recurrences in patients requiring repeated bougienage for dysphagia. A Tygon prosthetic tube was modified (MTT) with a core of 4 polyethylene tubes of similar length as the MTT surrounding another lung polyethylene tube used for loading iridium seeds. Attached to the top of the MTT are 2 lines used to anchor it to the nostrils, and attached to the bottom of the MTT is a mercury weight to prevent slippage. The modification allows a uniform circumferential administration of radiation, swallowing liquids during treatment, after-loading of the iridium and easy retrieval of the MTT. Patient discomfort during radiation is minimal. A Puestow guide wire is passed under direct vision. After swallowing the mercury weight, the ensemble consisting of MTT, pusher tube, Puestow straightener and stiffener is passed over the guide wire to the site. Placement is then checked by endoscopy and x-ray. Three patients with dysphagia from recurrent biopsy proven esophageal cancer who had previously received external beam irradiation were treated with intraluminal radiation over 72 hours (6000 to 3000 rads). X-ray, endoscopy and biospy at 2 and 8 weeks showed no recurrence. Dysphagia disappeared and there was esophageal lumen patency. Follow up has been 4 month to date. (no Refs)

9. THE USE OF IRRADIATION THERAPY IN THE TREATMENT OF TUMORS OF THE RECTUM AND RECTOSIGMOID.

Saxton JP, Withers HR, Romsdahl MM, Borgelt BB
Dept. Radiotherapy, M. D. Anderson Hosp. and Tumor Inst., Houston, TX, 77030
J Natl Med Assoc; 74(6):529-533 1982

As a means of increasing local control and disease-free survival in patients with carcinoma of the rectum and rectosigmoid, preoperative and postoperative irradiation therapy have been shown to be effective. The question of the sequence of delivering adjuvant radiation therapy is not settled; however, the benefits and deficits of irradiation therapy as an adjuvant to surgery preoperative and postoperative are reviewed. Basic principles of radiation oncology affecting the selection of the sequence and technique of treatment are discussed. (Author abstract) (25 Refs)

10. THE FLEXIBLE IMPLANT IN TREATMENT OF RECTAL CARCINOMAS.

Vider M, Lim N, Ditlow R, Au F, Gennaro AR
Dept. Radiation Oncology, Univ. Tennessee Center Health Sciences, Walter F. Chandler Building, 865 Jefferson Ave., Memphis, TN, 38163
J Surg Oncol; 20(3):157-160 1982

A modified technique for removable afterloading Iridium-192 implantation is described. Under local or general anesthesia, a series of flexible tygon tubes are introduced into all the tumor area in the rectum. This technique is especially suitable for palliation in high-risk, elderly patients. No rectal tube is necessary in this technique. (Author abstract) (11 Refs)

11. COMBINED SURGICAL-RADIOLOGICAL TREATMENT OF ANAL CARCINOMA.

Gross E, Eigler FW, Schulz U, Schere E
Chirurgische Universitatsklinik, Hufelandstrasse 55, D-4300 Essen, W. Germany
Chirurg; 53(5):322-324 1982

Anal carcinoma was treated in 29 patients (5 men and 24 women). Tumors were located in the anal canal in 18 patients and in the anal margin in 11. Tumors included 26 squamous epithelial carcinomas (SEC), 1 adenocarcinoma, 1 malignant melanoma (MM), and 1 basaloma. Thirteen SEC were keratinizing, 6 were slightly keratinizing, and 7 were nonkeratinizing. Ten patients underwent local excision of tumor and postoperative irradiation; the observation period was 2-6 yr. Two patients died of the tumors 9 and 14 mo after diagnosis. The patient with MM was treated palliatively; local and inguinal lymph node metastases were found 8 mo after treatment. Seven patients remained free of disease, including three for greater than 5 yr. Seven patients underwent abdominoperineal rectal extirpation (APRE); four of these also underwent postoperative irradiation. Four of the patients undergoing APRE died of tumor 5 mo-5 yr after diagnosis. One patient underwent irradiation for local recurrence of tumor. Two patients remained free of recurrence 2 and 16 mo after surgery. Twelve patients underwent irradiation only. Three patients died, including two after 14 mo. Two patients were lost to follow-up. One patient underwent palliative irradiation of an extensive carcinoma with lymph node metastases. Two patients required subsequent APRE. Five patients remained free of recurrent tumor after irradiation. Evidently removal of the anal sphincter does not improve the radicalness of surgery; the procedure is unnecessary in treatment of Stage I or II tumors. (15 Refs) (In GER)

12. TREATMENT OF ASYMPTOMATIC METASTATIC CANCER TO THE LIVER FROM PRIMARY COLON AND RECTAL CANCER BY THE INTRAARTERIAL ADMINISTRATION OF CHEMOTHERAPY AND RADIOACTIVE ISOTOPES.

Ariel IM, Padula G
137 East 36 St. Terrace, New York, NY, 10016
J Surg Oncol; 20(3):151-156 1982

Forty patients with asymptomatic metastatic cancer to the liver discovered at the time of laparotomy were treated by combined intrahepatic arterial chemotherapy and internal irradiation in the form of 90Yttrium microspheres. One group of 25 patients were treated by a catheter inserted at the time of operation and received 100 mCi; of 90Yttrium microspheres and 5-fluorouracil on a continuing basis. They survived an average of 26 mo (varying from 9 to 60 mo). The second series of 15 patients referred after surgery were treated by the percutaneous insertion of the catheter into the hepatic artery and received a bolus of combined chemotherapy consisting of Platinol, Methotrexate, and 5-fluorouracil. They survived an average of 31 mo, which varied from 12 to 60 mo. The dose of 100 mCi of 90Yttrium was well tolerated by the liver. Prospective studies are in progress, limiting the treatment to the internal irradiation to determine its precise role in the overall treatment of metastatic cancer to the liver. (Author abstract) (33 Refs)

13. POSTOPERATIVE IRRADIATION OF CARCINOMA OF THE HEAD OF THE PANCREAS AREA. SHORT-TIME TOLERANCE AND RESULTS TO PRECISION HIGH-DOSE TECHNIQUE IN 18 PATIENTS.

Nguyen TD, Bugat R, Combes PF
(c/o Bugat) Dept. Therapeutic Radiology, Centre Claudius Regaud, 11, rue Piquemil, 31052 Toulouse Cedex, France
Cancer; 50(1):53-56 1982

During the period from January 1977-August 1979, 18 patients with biopsy-proven pancreas duct or ampullary adenocarcinoma with no distant or liver metastases underwent external beam radiation therapy following laparotomy. With the use of a 25 MEV photon beam and a four field 'box' technique, the dose delivered to the target volume identified with radio-opaque clips at laparotomy was 6,000 rad in 5 wk, while largely sparing the spinal cord, kidney, liver and gut. All patients subjected to low fat, gluten free diet completed treatment as planned without any acute reaction. Three patients developed delayed pancreatic insufficiency. According to actuarial survival analysis and low morbidity such an approach may lead to increased survival in patients with pancreatic cancer. (Author abstract) (13 Refs)

14. METHODOLOGICAL APPROACHES TO INDIVIDUAL PLANNING OF MEGAVOLTAGE RADIOTHERAPY IN CANCER OF THE PANCREATODUODENAL REGION.

Pronin VI, Morozov AI, Rozanov IuL, Zverev MP, Prilepo VN
N. A. Semashko Medical Stomatological Inst., Moscow, USSR
Med Radiol (Mosk); 27(5):32-36 1982

Indications for high-energy radiotherapy in cancer of the pancreatoduodenal region are outlined, and results of the use of 25 million electron volts beta therapy in 12 men (39-68 yr old) with unresectable tumors are reported. During palliative surgery (formation of biliodigestive anastomosis), the patients were subjected to marking of the primary tumor and of regional metastases. Radiotherapy was started on day 25 after the palliative surgery: the patients received split-course irradiations from two opposite lateral fields (150-200 rads/day, 5x/wk, total dose 5,500-7,500 rads). At the time of report (12 mo later), all patients were alive. (13 Refs) (In RUS)

GENITOURINARY NEOPLASMS

15. CYSTOTOMY AND PEROPERATIVE IRRADIATION FOR BLADDER CANCER: LONG-TERM RESULTS.

Appelqvist P, Salmo M
Dept. Radiotherapy and Oncology, Univ. Central Hosp., Haartmaninkatu 4, 00290 Helsinki 29, Finland
J Surg Oncol; 20(2):75-79 1982

The long-term results were investigated in 46 patients of bladder cancer treated by cystotomy and peroperative irradiation. This combination therapy appears to produce grossly comparable long-term survival results with surgery and radiotherapy. There were 10 complications during a 10-yr period after the treatment. We think that cystotomy and peroperative irradiation could still be used for the treatment of bladder cancer especially when the tumor is not too large, is situated at the base of the bladder, segmental resection cannot be performed, and the patient wants to spare the bladder function. (Author abstract) (13 Refs)

16. MEGAVOLTAGE RADIATION THERAPY IN CARCINOMA OF THE PENIS.

Sharma U, Rath GK, Singhal RM, Sharma LK, Prakash A
Dept. Radiotherapy, All India Inst. Medical Sciences, New Delhi, India
Int Surg; 67(1):69-71 1982

The clinical profile of 84 cases of carcinoma of the penis are reviewed. A practical radiation technique for megavoltage beam units is described. Complete ablation of the tumor in 18 of 20 (90%) patients in a radically irradiated group suggests a tumor ablation dose of 5,500r in 17 fractionation treatments. (Author abstract) (11 Refs)

GYNECOLOGIC NEOPLASMS

17. TREATMENT OF ENDOMETRIAL CARCINOMA WITH RADIATION THERAPY ALONE.

Abayomi O, Tak W, Emami B, Anderson B
Tufts-New England Medical Center, 171 Harrison Ave., Boston, MA, 02111
Cancer; 49(12):2466-2469 1982

Of 393 patients treated at Tufts-New England Medical Center for endometrial carcinoma from 1968-1977, 66 patients underwent radiation therapy alone because of medical contraindications to surgery. The median age for this group was 70 yr. The patient distribution was Stage I (39), Stage II (11), and Stage III and IV (16). Therapy consisted of pelvic irradiation to a dose of 4,000-5,000 rad followed by an intrauterine radium application (3,000-5,000 mg hr) and a vaginal radium application (2,000-4,000 rads to the surface). Local control was achieved in 37 of 50 patients with Stages I and II disease with a 3-yr actuarial survival of 78%. Patients with Stages III and IV disease had a median survival of 15 mo; 4 of 16 patients survived for 36 mo. In this group of patients, bleeding, pain, and vaginal discharge was palliated. Four patients in the series had treatment-related bowel complications requiring colostomy. This is an effective method of treatment for endometrial carcinoma patients who are not surgical candidates. (Author abstract) (10 Refs)

18. WHOLE PELVIC IRRADIATION IN STAGE I ENDOMETRIAL CARCINOMA: CHANGES IN NUMBERS AND REACTIVITIES OF SOME BLOOD LYMPHOCYTE SUBPOPULATIONS.

Onsrud M
Tissue Typing Lab., Rikshospitalet, Natl. Hosp., Oslo, Norway
Gynecol Oncol; 13(3):283-292 1982

Peripheral blood lymphocytes of 64 operated, Stage I endometrial carcinoma patients were tested for natural killer (NK) activity, mitogenic (PHA) responsiveness, and distribution of surface markers. Sequential studies showed an 83% reduction of lymphocyte numbers immediately after 4,000 rad whole pelvic irradiation. T cells were relatively more sensitive to in vivo irradiation than NK cells. The long-term effects were studied in patients belonging to a clinical trial and who were either randomized to radiotherapy or not. Three to 5 yr after treatment, the irradiated patients showed increased NK activity and a greater fraction of lymphocytes bearing receptors for the Fc part of immunoglobulin G, as compared to controls. Conversely, lymphocytes from radiotherapy patients showed a depressed PHA responsiveness, which could be attributed to T-cell depletion. When investigated 9-12 yr after treatment, the results of functional tests and cell enumerations were similar for the two treatment groups. It is concluded that this radiotherapy regime causes long-lasting, although transitory, depletions of certain blood lymphocyte subpopulations. On a per cell basis, however, the lymphocytes have retained their functional capacity. (Author abstract) (21 Refs)

19. A PHASE I STUDY OF MISONIDAZOLE AND PELVIC IRRADIATION IN PATIENTS WITH CARCINOMA OF CERVIX.

Thomas GM, Rauth AM, Black BE, Cummings BJ, Sorenti VL, Bush RS
Dept. Radiation Oncology, Ontario Cancer Inst., Princess Margaret Hosp., Toronto, Ontario M4X 1K9, Canada
Br J Cancer; 45(6):860-868 1982

A Phase I study of oral daily misonidazole (MISO) with conventional pelvic irradiation, has been conducted in patients with carcinoma of the cervix Stages IB, IIB, IIIB and IVA. MISO was administered in daily dosages to sequential groups of patients at doses of 0.15 g/m2, 0.30 g/m2 or 0.45 g/m2 for 22 days over 5 wk. Sixteen patients were assigned to each dose level. Using a double-blind randomization, they received either placebo (3/16) or MISO (13/16). The major dose-limiting toxicity was peripheral neuropathy (PN). None of the 13 patients receiving 0.15 g/m2 or the 13 receiving 0.3 g/m2 developed PN. However, 6/13 at the 0.45 g/m2 level (total dose less than or equal to 9.9 g/m2) developed PN. Additional patients were entered at this level and a total of 13/26 developed PN, which was considered of clinically significant severity in 9. Symptoms of PN have persisted from 1 wk to 10 mo, and have been completely reversed in 9/13 patients. Pharmacological parameters were examined for correlation with clinically evident toxicities. Although peak plasma MISO levels and half-lives did not correlate significantly with PN, there was a significant correlation between the calculated 'area under the curve' (AUC) and PN. No correlation exists between PN and total urinary excretion of MISO or the O-demethylation product. A daily dose of 0.45 g/m2; MISO (total dose less than or equal to 9.9 g/m2) is considered to produce an acceptable level of toxicity for this patient population. (Author abstract) (18 Refs)

20. VALUE OF COMPUTER TOMOGRAPHY IN THE STUDY OF DOSE DISTRIBUTION IN INTRACAVITARY CURIETHERAPY.

Cionini L, Renzi R, Andreucci L, Pirtoli L, Pacini P, Mungai R
Istituto di Radiologia dell'Universita, Policlinico Careggi, 50134 Florence, Italy
Radiol Med (Torino); 68(4):267-274 1982

Patients with carcinomas of the uterine cervix were subjected to computer tomographic examinations soon after the insertion of the uterovaginal applicators. The tomographic information was transferred into an integrated system for optimization of treatment planning, and dose distributions were obtained directly superimposed to the tomographic sections. (10 Refs) (In ITA)

HEAD AND NECK NEOPLASMS

21. PROTON BEAM IRRADIATION OF UVEAL MELANOMAS. RESULTS OF 5-1/2-YEAR STUDY.

Gragoudas ES, Goitein M, Verhey L, Munzenreider J, Urie M, Suit H, Koehler A
Retina Service, Massachusetts Eye and Ear Infirmary, 243 Charles St., Boston, MA, 02114
Arch Ophthalmol; 100(6):928-934 1982

Proton beam irradiation was used in the treatment of 76 uveal melanomas from July 1975 to December 1980. Five (7%) were small, 32 (42%) were medium, and 39 (51%) were large melanomas. The follow-up period ranged from 2 mo to 5-1/2 yr; 19 patients were followed up for more than 2 yr and 39 were observed for more than a yr. Tumor regression has been achieved in all eyes with more than 12 mo of follow-up except one, which was enucleated because of secondary complications. Three patients in whom metastatic disease developed died. Our data indicate that proton irradiation can be used for the treatment of relatively large lesions that previously were considered untreatable and reduces the high ocular morbidity experienced with other methods in the treatment of medium and small melanomas. (Author abstract) (31 Refs)

22. HELIUM ION THERAPY FOR CHOROIDAL MELANOMA.

Char DH, Castro JR, Stone RD, Irvine AR, Barricks M, Crawford JB, Schatz HA, Lonn LI, Hilton GF, Schwartz A, Quivey JM, Saunders W, Chen GT, Lymon JT
Ocular Oncology Unit, S-315, Univ. California, San Francisco, CA, 94143
Arch Ophthalmol; 100(6):935-938 1982

Forty patients with choroidal melanomas received radiation therapy with helium ion-charged particles. Thirty-six of 40 patients either remained stable or demonstrated tumor shrinkage. Seventeen of 18 patients followed up for at least 1 yr after therapy demonstrated tumor regression, with a mean tumor shrinkage of approx 40%. The most effective method of choroidal melanoma management is unclear. Charged-particle external-beam irradiation may be more applicable and have less ocular morbidity than either radioactive plaques or photocoagulation. (Author abstract) (20 Refs)

23. NASOPHARYNGEAL CARCINOMA IN CHILDHOOD.

Lombardi F, Gasparini M, Gianni C, De Marie M, Molinari R, Pilotti S
Istituto Nazionale per lo Studio e la Cura dei Tumori, Via Venezian 1, 20133 Milan, Italy
Med Pediatr Oncol; 10(3):243-250 1982

We have retrospectively evaluated a series of 27 consecutive children observed from 1965 to 1980 with nasopharyngeal carcinoma (NPC). Histological diagnosis in each patient was undifferentiated carcinoma of nasopharyngeal type (UCNT) with prominent lymphocytic infiltration. Regional node involvement was present in 26 of 27 patients and 2 children presented with distant metastases. Twenty evaluable children with primary nasopharyngeal tumor with or without positive cervical nodes underwent radiotherapy (RT) with uniform criteria in technique. Adjuvant cyclophosphamide (CPM) was administered to a total of 11 children. The actuarial relapse-free survival and overall survival are 40% and 55% at 4 yr, respectively. In this series, the most important prognostic factor was represented by the extent of the tumor in the nasopharynx. Permanent control of the primary tumor was obtained in 85% of patients. CPM given after RT did not reduce the incidence of relapse. However, the fact that 45% of patients developed distant metastases as first treatment failure suggests that combined chemotherapy should be tested in the management of NPC in children, especially when primary tumor is locally advanced. (Author abstract) (39 Refs)

24. CARCINOMA OF THE PARANASAL SINUSES.

Bush SE, Bagshaw Ma
(c/o Bagshaw) Dept. Radiology, Div. Radiation Therapy, Stanford Univ. Sch. Medicine, Stanford, CA, 94305
Cancer; 50(1):154-158 1982

Thirty-eight patients with carcinoma of the paranasal sinuses received primary therapy consisting of external beam megavoltage irradiation alone or in combination with surgery at the Stanford University Medical Center, Division of Radiation Therapy, during the period between 1956-1974. Doses of radiation ranged from 5,560 rad over 5-1/2 wk to 8,050 rad over 7 wk. Relapse free survival is 37% and absolute survival 32% at 5 yr. Twenty of 38 patients developed local failure and four patients died with metastatic disease but local control. Serious complications included two cases each of osteoradionecrosis and optic nerve injury. The data are analyzed regarding dose, radiotherapeutic technique, patterns of relapse and complications. (Author abstract) (14 Refs)

25. ADENOCARCINOMA OF THE PARANASAL SINUSES IN TASMANIA.

Franklin CI
Peter MacCallum Clinic, Hobart, Tasmania
Australas Radiol; 26(1):49-52 1982

A survey was made of all the hospital records in Tasmania of cases of tumor of the paranasal sinuses presenting between 1966 and 1978 inclusive. Twenty cases were discovered, of which 13 were adenocarcinoma. Of the 13 cases of adenocarcinoma, 9 were woodworkers, and another worked with wood as a hobby. None of the other patients were woodworkers. Assuming 4,000 people are at risk per annum, this incidence is 250 per million per annum, against an expected of not more than 10 per million per annum. Radiotherapy has been the mainstay of treatment, with doses ranging from 57 Gray in 26 fractions over 6 wk to 60 Gray in 18 fractions over 4 wk. Those that have done best have had about 60 Gray over 6 wk, followed by major surgical resection. Survival is poor, with 50% survival at 2 yr. There is an extremely high incidence of adenocarcinoma involving the ethmoids and upper antrum in Tasmania. This is confined almost exclusively to men working in the timber industry. The prognosis is poor, but a combination of radiotherapy and surgery offers the best chance of cure. (Author abstract) (5 Refs)

26. CURIETHERAPY OF ORAL CANCER.

Volterrani F, Chiesa F, Molinari R
Istituto Nazionale Tumori, Via G. Venzian 1, 20133 Milano, Italy
Tumori; 68(2):119-125 1982

This work concerns 406 oral carcinomas treated with curietherapy (interstitial applications and surface molds) from January 1959 to December 1970. There were 65 (16.0%) carcinomas of the mucosal surface of cheeks, 15 of the retromolar areas, alveolus and gingiva, and hard palate (3.7%), 211 of the mobile tongue (51.9%), and 115 of the floor of mouth (28.4%). There were 132 (32.5%) T1 cases, 245 (60.3%) T2 and 29 (7.2%) T3. In 376 cases with adequate follow-up (92.6%) there were 93 (24.7%) local relapses: 83 isolated and 10 associated with a lymph nodal relapse; 49.5% of the local relapses were peripheral with respect to the treated volume (46/93). The incidence of local relapses only slightly differed from initially T1 and T2 cases (respectively 21.8% and 22.7%), whereas it was more than twice as much for initially T3 cases (53.6%). The overall incidence of radionecrotic complications was 22.0% (83/376 cases with adequate follow-up). Altogether the disease-free survival was 41.1% and 31.4% at 5 and 10 yr, respectively. We think that local control of practically all treatable oral carcinomas can be obtained with a combined treatment. (Author abstract) (20 Refs)

27. COMBINED CHEMOTHERAPY WITH DOXORUBICIN, BLEOMYCIN, VINBLASTINE, DACARBAZINE, AND RADIOTHERAPY FOR ADVANCED LYMPHOEPITHELIOMA.

Galligioni E, Carbone A, Tirelli U, Veronesi A, Trovo MG, Magri MD, Crivellari D, Roncadin M, Frustaci S, Tumolo S, Grigoletto E

Div. Radiotherapy and Medical Oncology, Ospedale Civile, 33170 Pordenone, Italy

Cancer Treat Rep; 66(5):1207-1210 1982

Twelve consecutive patients with advanced lymphoepithelioma and no previous chemotherapy or radiotherapy were observed in our division between January 1975 and December 1980. Primary treatment of 11 evaluable patients with doxorubicin (adriamycin), bleomycin, vinblastine, and dacarbazine (ABVD) for at least three cycles resulted in complete remission (CR) in 4 patients; partial remission with a greater than 50% reduction of tumor volume in 4; partial remission with a less than 50% reduction of tumor volume in 1; and no response in 2. With the addition of radiotherapy in doses of 4,500-6,000 rad to the primary tumor and the bilateral laterocervical lymph node chains, the combined treatment resulted in CR in eight patients. At 27 mo the median duration of CR in these patients has not been achieved, and the median survival has not been achieved at 32 mo. (Author abstract) (16 Refs)

28. EFFICACY OF PROTECTIVE INTRAORAL DEVICES IN RADIOTHERAPY OF MALIGNANT TUMORS OF THE MAXILLOFACIAL REGION.

Vorob'ev IuI, Nurmagomedov AM, Sarantseva IP

N. A. Semashko Medical Stomatological Inst., Moscow, USSR

Med Radiol (Mosk); 27(4):15-20 1982

To reduce the radiation injuries of mouth mucosa, protective dental devices were used during the radiotherapy of 90 patients (68 men, 22 women; 86 were greater than 40 yr old) with malignant tumors of the maxillofacial region. The patients were subjected to daily irradiations at 200-250 rads, total dose 5,500-7,000 rads. Occlusion devices provided an effective protection of mouth mucosa against the secondary irradiation. The symptoms of local epithelites were observed only after irradiation with relatively high doses of 4,800-5,300 rads. (11 Refs) (In RUS)

29. RESULTS OF BRACHYTHERAPY FOR CANCER OF THE TONGUE WITH SPECIAL EMPHASIS ON LOCAL PROGNOSIS.

Horiuchi J, Okuyama T, Shibuya H, Takeda M

Tokyo Medical and Dental Univ., Yushima, 1-5-45, Bunkyo-ku, Tokyo 113, Japan

Int J Radiat Oncol Biol Phys; 8(5):829-835 1982

Treatment results of radiotherapy for carcinoma of the tongue including limits for brachytherapy (BT) were analyzed in 166 patients (96 males, 70 females, 21-81 yr old, av 55 yr) with carcinoma of the tongue to define criteria of BT. Thirty-four patients had T1, 83 had T2, and 49 had T3 lesions according to the TNM system. Forty-seven of 166 (28.3%) patients had lymphadenopathy. Treatment modalities were mainly interstitial implant with or without external beam irradiation, except for early lesions which were treated with intraoral electron beam therapy. Actuarial survival rates for the 166 patients were 78.9%, 60.5%, and 55.6% after 1, 2, and 3 yr, respectively. For the grade of the primary lesion the 5-yr survival rates were 67.1% for T1, 62.5% for T2, and 30.3% for T3 lesions. The local recurrence-free rates were 94% in T1, 77% in T2, and 32% in T3 lesions, respectively. Among the patients with T1 and T2 lesions treated with intracavitary irradiation, 87% (13/15) and 75% (3/4), respectively, were free of disease. Except for four patients with T2 lesions, no recurrence was noticed during the 2-yr follow-up. Radium-needle implants were performed in 29 patients of whom 27 (93%) had their disease completely controlled. No patient developed severe complications in either the mucosa or mandible. Transient mucosal ulcer was noticed in 12 patients, but 11 recovered spontaneously within 6 mo. Thus, although 20 patients (19%) out of the 103 patients who survived more than 2 yr after the initial treatment developed complications subsequent to the radiation, only 3% had moderate (+ +) complications. (13 Refs)

30. PRIMARY TREATMENT OF EPITHELIOMA OF THE LIP.

Curioni C, Padula E, Maraggia A

Divisione di Chirurqia Maxillo-Facciale Unita Sanitaria, Locale n. 8 Presidio Ospedaliero San Bortolo, Vicenza, Italy

Minerva Stomatol; 31(2):173-188 1982

Of 75 patients with epithelioma of the lip, 70 were cured by means of surgery and/or radiotherapy; the primary lesion proved to be resolvable in 59 of the patients. Follow up studies showed the absence of recurrent tumors over an extended period of time. In 16 patients, who presented particularly large lesions, the local recurrences that were observed were subsequently treated by means of radical surgery; further lesions did not develop after the radical surgery, and thus the actual rate of recovery rose to 86.7%. Results of the study demonstrated that radiotherapy is a successful method of treatment for T1 and T2 lesions, while surgery, alone or in combination with radiotherapy or a more aggressive approach, offers statistically better results with T3 and T4 lesions. Epithelioma of the lip is a neoplasm that affects elderly patients. The onset of epithelioma is closely related to cofactors (smoking, alcohol, or exposure to UV). Epitheliomas tend to localize on the lower lip and at present are easily curable with modern medicine when the lesions are not extensive. (49 Refs) (In ITA)

31. THE MANAGEMENT OF PAROTID LYMPH NODE METASTASES BY IRRADIATION.

Wang CC
Dept. Radiation Medicine,, Massachusetts General Hosp., Boston, MA, 02114
Cancer; 50(2):223-225 1982

An analysis of 28 patients with parotid nodal metastases from carcinomas treated by radiation therapy at the Massachusetts General Hospital was made. Of 24 patients treated more than 24 mo previously, the NED survival and local tumor control rates were 54% and 75%, respectively. For the early lesions with disease limited to the parotid nodes, the local control rate was 83% following radiation therapy. A modified staging system for nodal metastases to this particular site is presented. (Author abstract) (8 Refs)

32. EXTERNAL RADIOTHERAPY OF CANCER OF THE THYROID (MEETING ABSTRACT)

zum Winkel K
Abteilung Allgemeine Radiologie mit Poliklinik, Universitats-Strahlenklinik, Vossstrasse 3, D 6900 Heidelberg, W. Germany
J Cancer Res Clin Oncol; 103(Suppl):A39 1982

By external (percutaneous) radiotherapy the survival of patients with cancer of the thyroid is improved. For external radiotherapy photons or electrons are used. In planning radiotherapy computer-tomography is performed. In the thyroid region we apply 15 MeV electrons. The radiation field is extended to the cervical lymph nodes, thyroid bed and if suspected to the cranial portion of the mediastinal lymph nodes. For equal radiation of the cervical region we prefer the teletherapy with cobalt-60. For the region of the primary tumor and the regional lymph nodes 60-70 Gy are administered. The palliative doses for metastases is 40-50 Gy. Indicated for radiotherapy are patients with primary or metastatic tumors of the thyroid failing in radioiodine uptake and patients with thyroid cancer which cannot be removed. Postoperative radiation therapy is indicated in patients with anaplastic carcinoma, sarcoma, mixed type of carcinoma, non-Hodgkin lymphoma and metastases to the thyroid of breast or cervic carcinoma. Palliative radiotherapy is concerned in bone metastases for prevention of fracture or in obstruction of the spinal cord. In 38 patients with removed thyroid cancer and failing radioiodine uptake the postoperative radiation therapy resulted in a 5 year survival rate of 87 percent. In more progressive stages (13 patients) or even in distant metastases (30 patients) the 5 year survival rates were 38 or 13 percent, respectively. However, in 23 patients with anaplastic carcinoma or sarcoma the 5 years survival rate was only 4 percent. Sixty-six patients had percutaneous radiotherapy exclusively, 20 percent survived 5 years. (no Refs)

33. RADIATION THERAPY WITH TWICE A DAY FRACTIONATION.

Touboul E, Caenal C, Nizri D, Chaillet MP, Alseoudi M, Szpirglass H, Marneur M
Centre des Tumeurs, C.H.U. Pitie-Salpetriere, 47, boulevard de l'Hopital, F-75013 Paris, France
Bull Cancer (Paris); 69(2):167-169 1982

Sixty-five patients (62 men, 3 women; 35-80 yr old) with head and neck neoplasms were treated with split-course radiotherapy. Cobalt 60 irradiation was administered in two series of irradiation separated by an interval of 14 days. In each series, 30 Grays was administered in 10 treatments over five days. In each of the two daily treatments, separated by 4-6 hr, 3 Grays were administered. Mucosal tolerance for radiation studied in 55 patients was not related to previous treatment or lack of treatment with antineoplastic agents. Gastric intubation was required in 9 patients, 3/24 of patients who had received previous chemotherapy and 6/41 of those who had received no chemotherapy. Three complications resulted from split-course radiotherapy: in two cases, edema of the pharyngolaryngeal junction required a nasogastric tube and in one case, a fracture of the lower jaw occurred 3 mo after the end of radiotherapy. Of the 25/32 patients with squamous cell carcinoma of the floor of the mouth, 11 showed no sign of local recurrence 18 mo after treatment. Of the 7/10 patients with carcinoma of the retromolar fornix available for follow-up at 18 mo post-therapy, 2 showed local control of tumor. (9 Refs) (In FRE)

34. COMBINATION CHEMOTHERAPY USED PRIOR TO RADIATION THERAPY FOR LOCALLY ADVANCED SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.

Tannock I, Cummings B, Sorrenti V, Beale F, Clark R, Harwood A, Fitzpatrick P, Keane T, Payne D, Rider WD, Blackstein M, Osoba D, Bryce D
Princess Margaret Hosp., Ontario Cancer Inst., 500 Sherbourne St., Toronto M4X 1K9, Canada
Cancer Treat Rep; 66(6):1421-1424 1982

Thirty-three patients with locally advanced squamous cell carcinoma of the head and neck were scheduled to receive two courses of chemotherapy prior to radical radiotherapy. Chemotherapy consisted of moderate-dose methotrexate with leucovorin rescue, bleomycin by infusion, and cisplatin. Loss of body wt and the duration of membrane formation at a specified region of the oral cavity during radiation therapy were used as indices of radiation toxicity: there was no excessive loss of body wt or mucosal reaction in patients who received combined treatment compared to patients in a nonrandomized control group who received radiotherapy alone. Twenty patients (60%) had a greater than or equal to 50% decrease of measurable disease prior to starting irradiation, but only eight patients (24%) are alive and disease-free at a median follow-up of 16 mo. Aggressive chemotherapy does not prevent delivery of subsequent full-dose radiotherapy for squamous cell carcinoma of the head and neck, but this study does not suggest that chemotherapy has a great beneficial effect on long-term survival. (Author abstract) (6 Refs)

35. DENTAL CARE FOR CANCER PATIENTS RECEIVING RADIOTHERAPY TO THE HEAD AND NECK.

Fleming TJ
Dept. Dental Oncology, Univ. Texas, M. D. Anderson Hosp. and Tumor Inst., Houston, TX
Cancer Bull; 34(2):63-65 1982

The team approach to dental care of the cancer patient receiving radiotherapy to the head and neck is discussed. The primary objective in such dental care is to minimize or prevent treatment-associated complications. Complications of radiotherapy most frequently encountered include xerostomia, mucositis, dermatitis, photosensitivity, fibrosis, trismus, radiation caries, abnormal bony development, and osteoradionecrosis. Preirradiation management involves the formulation of a realistic dental treatment plan based on a thorough clinical and radiographic evaluation and patient education. Dental management in the postirradiation phase involves periodic reevaluation for possible recurrence of new pathological conditions, management of possible treatment sequelae, prosthodontic rehabilitation, and evaluation of patient compliance with the preventive dental program. (11 Refs)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

36. COMBINED RADIO- AND CHEMOTHERAPY IN STAGE IIB AND III HODGKIN'S DISEASE.

Herrmann T, Fleischer J, Lesche A, Wolf H

Radiologische Klinik der, Medizinischen Akademie 'Carl Gustav Carus', Fetscherstrasse 74, DDR-8019 Dresden, E. Germany

Dtsch Gesundheitswes; 37(7):303-307 1982

The author reports on the retrospective evaluation of treatment courses in 64 patients suffering from Hodgkin's disease Stages IIB, IIIA and IIIB. A comparison is made between patients who had received radiation therapy only and those with combined radiological-chemotherapeutic treatment. The following conclusions may be drawn: (1) In Stage IIB 5-yr results of the group with combined therapy and the group with radiation treatment only are the same (75% with a 5-yr survival rate). However, the group treated with chemotherapeutics in addition, shows the better prognosis during the first 4 yr after starting therapy. Thus additional chemotherapy may only be omitted in cases where pretherapeutic explorative laparotomy has confirmed the presence of Stage IIB, where there is a favorable histological subtype and when after radiation therapy no signs of activity of the disease can be detected. (2) In Stage IIIA results of the group with combined treatment (5-yr survival rate 66%) are clearly better than in patients who received radiation only (29%). Additional chemotherapy has to be administered here with exact scheduling of the various forms of therapy being left open for decision by the medical experts concerned. (3) In Stage IIIB, radiation therapy as an additional measure to chemotherapy as the main form is a necessity (5-yr-survival rate 33%). (4) These results urgently require interdisciplinary cooperation as regards the therapeutic plan for the patient with Hodgkin's disease. The author reports on 'lymphoma counseling' as a possible and valuable form of such cooperation. (Author abstract) (17 Refs) (In GER)

37. CORONARY HEART DISEASE MORTALITY AFTER IRRADIATION FOR HODGKIN'S DISEASE.

Boivin JF, Hutchison GB

Dept. Epidemiology and Health, McGill Univ., 3775 Univ. St., Montreal, Quebec H3A 2B4, Canada

Cancer; 49(12):2470-2475 1982

The authors conducted a study designed to evaluate the hypothesis that irradiation to the heart in the treatment for Hodgkin's disease (HD) is associated with increased coronary heart disease (CHD) mortality. This report describes 957 patients diagnosed with HD in 1942-75 and analyzes follow-up findings through December 1977. Twenty-five coronary heart disease deaths have been observed, and 4,258.2 person-yr of experience at risk have been accrued. The relative death rate (RDR), defined as the CHD mortality for heart-irradiated subjects divided by the mortality for nonirradiated subjects, was estimated. After adjustment for the effect of interval of observation, age, stage, and class, the RDR estimate is 1.5 but does not differ significantly from unity (95% confidence limits: 0.59, 3.7). (Author abstract) (12 Refs)

38. TREATMENT OF MALIGNANT LYMPHOMAS OTHER THAN HODGKIN'S DISEASE. INFLUENCE OF HISTOLOGICAL TYPE.

Kenis Y, Vanderlinden B, Bron D

Service de Medecine, Institut Jules Bordet, Brussels, Belgium

Rev Med Brux; 3(4):243-248 1982

The treatment of malignant lymphomas other than Hodgkin's disease is based both on the stage of the disease and on the histological type. Favorable histological types such as well differentiated lymphocytic lymphoma, Waldenstrom's macroglobulinemia, and nodular lymphomas are characterized by slow evolution and eventual death despite apparently effective therapy. In Stages I and II of the favorable histological types, radiotherapy eradicates the disease in about 90% of cases, and the majority of relapses are in nonirradiated areas. Unfavorable histological types include undifferentiated lymphocytic lymphoma, diffuse histiocytic lymphoma, Burkitt's lymphoma, and lymphoblastic lymphoma that has a particularly poor prognosis. For Stage I and II patients with unfavorable histology, treatment should consist of radiotherapy followed by supplemental chemotherapy. Patients in more advanced stages benefit from a combination of chemotherapeutic agents, preferably including adriamycin. Even more intensive therapy similar to those used for the acute leukemias are necessary for the treatment of lymphoblastic lymphoma. To manage medullar aplasia that may arise from massive chemotherapeutic doses delivered for resistant lymphoblastic lymphoma, healthy bone marrow should be saved out at the time of diagnosis so that autologous bone marrow graft may be delivered in the event of such aplasia. (35 Refs) (In FRE)

39. COMBINATION CHEMOTHERAPY (CVP OR CHOP)-RADIOTHERAPY APPROACH IN EARLY STAGE NON-HODGKIN'S LYMPHOMAS.

Comella P, Scoppa G, Abate G, Comella G, Apice G, Castello G, Pergola M, Giordano GG, Coucourde F, Zarrilli D

Istituto dei Tumori, Cappella dei Cangiani, 80131 Napoli, Italy

Tumori; 68(2):137-142 1982

From January 1978 to December 1980, 42 patients with early stage non-Hodgkin's lymphoma other than of the gastrointestinal tract were treated with radiotherapy and combination chemotherapy. Eighteen patients in Stage I were submitted to locally extended-field radiotherapy up to a mean dose of 48 Gy with a Co60 source and, after a 3-wk rest period, to six cycles of combination chemotherapy. Twenty-four patients in Stage II received three cycles of combination chemotherapy before and after irradiation, the same as for Stage I. Combination chemotherapy consisted of cyclophosphamide, vincristine and prednisone (CVP) for 15 cases with favorable histology (3 NWDL, 1 NPDI, 11 DWDL), whereas it included cyclophosphamide, adriamycin, vincristine and prednisone (CHOP) for 27 cases with unfavorable histology (20 DPDL, 3 DM, 4 DH). Complete remission (CR) was achieved in 35/42 (83%) patients, with a highly significant difference between Stage I (100%) and Stage II (71%). After 42 mo of follow-up, the probability of survival for all patients was 72%. Survival was better for Stage I (88%) than for Stage II (68%) and for favorable histology (87%) as compared to unfavorable histology (70%). Furthermore, survival was highly influenced by response to therapy. Indeed, actuarial survival rate for CR was 91% as compared to a median survival time of 10.2 mo for the remaining patients. Four patients, all with poor histology, relapsed after 5-24 (mean 11) mo of CR. Only one of them had an extension in extranodal sites and eventually died, despite the salvage treatment utilized. In our experience, locally extended-

READEX FICHE best copy available

field irradiation combined with chemotherapy gave a high proportion of CR and seemed to prevent relapses, particularly in extranodal sites. (Author abstract) (32 Refs)

40. MARROW TRANSPLANTATION FOR ACUTE NONLYMPHOBLASTIC LEUKEMIA IN FIRST REMISSION USING FRACTIONATED OR SINGLE-DOSE IRRADIATION.

Thomas ED, Clift RA, Hersman J, Sanders JE, Stewart P, Buckner CD, Fefer A, McGuffin R, Smith JW, Storb R

Dept. Medicine, Div. Oncology, Univ. Washington Sch. Medicine and Fred Hutchinson Cancer Res. Center, 1124 Columbia St., Seattle, WA, 98104

Int J Radiat Oncol Biol Phys; 8(5):817-821 1982

Fifty-three patients with acute nonlymphoblastic leukemia transplanted in first remission were irradiated (1,000 rad total body irradiation, one exposure with 200 rad one each of 6 days). The patients characteristics and the outcome are summarized. The chemotherapy given to the patients prior to referral for marrow transplantation varied according to the protocol at the referring institution. No apparent difference in the acute toxicity of the two applied regimens was observed. The immediate causes of death are listed. (24 Refs)

MUSCULOSKELETAL NEOPLASMS

41. RADIOTHERAPY WITH SURGERY FOR SALVAGE FOR PERIPHERAL EWING'S SARCOMA (MEETING ABSTRACT).

Kliman M, Harwood AR, Fornasier VL

No affiliation given

J Bone Joint Surg [Br]; 64(2):258 1982

The authors studied the survival, local recurrence rates and limb function of 22 patients with Ewing's sarcoma peripheral to the elbow or knee. The primary treatment had consisted of moderate dose radiotherapy, surgery being reserved for the salvage of failures of irradiation. Five of the 22 patients had had a local recurrence after irradiation: two died, two had been salvaged (one by amputation and one by re-irradiation), and one patient had had a palliative amputation. Eleven patients were alive and well with an average follow-up of eight years, nine having been controlled by primary irradiation and two by salvage irradiation or surgery. Eleven had died of metastases. The functional results of treatment were assessed in the 11 survivors, of whom nine had normal function, one had a significant leg length discrepancy, and one had had an amputation. No radiation-induced sarcomata had been observed. They concluded that moderate doses of radiation with surgery for salvage provided a good rate of cure with an excellent functional result. (no Refs)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

42. UNEVEN PREOPERATIVE IRRADIATION IN COMBINED TREATMENT OF LUNG CANCER.

Klimenko AA, Kharchenko VP, Karibov IuI, Losev SI, Pokas LV

Res. Roentgenoradiological Inst., Moscow, USSR

Med Radiol (Mosk); 27(5):36-39 1982

Therapeutic efficacy of preoperative distant gamma therapy was studied in 50 patients (47 men, 3 women; 45-60 yr old) with lung cancer. Among these patients, 7 were in Stage I, 29 were in Stage II, and 14 were in Stage III; 27 patients had central tumors and 23 had peripheral tumors. Histologically, 9 had adenocarcinomas, and 41 had squamous cell carcinomas. The patients received daily irradiations from 2-3 fields (single dose 300 rads, 5x/wk, total focal dose 3,600 rads), followed by surgery (pneumonectomy) 10-14 days later. The preoperative radiotherapy caused an improvement in the general state of the patients (decrease or disappearance of pain, dyspnea, and cough). X-ray examination showed tumor regression in 66% of the patients. The efficacy of the radiotherapy did not depend upon tumor localization or histology. The incidence of postoperative complications did not exceed that after surgery alone. Morphological examination of surgical specimens showed complete tumor regression in 1, marked radiation necrosis in 17, mild radiation necrosis in 27, and slight radiation necrosis in 5. The 1-, 2-, 3-, and 4-yr survivals were 84%, 67,2%, 55.1%, and 55.1%, respectively. All patients were free of recurrences. (10 Refs) (In RUS)

43. RADIOTHERAPY OF LUNG CANCER PATIENTS WITH III DEGREE OF PULMONARY INSUFFICIENCY.

Zhakov IG, Goncharova IM, Zhakova LA, Rebrikova ID

Res. Roentgenoradiological Inst., Moscow, USSR

Med Radiol (Mosk); 27(4):6-9 1982

Efficacy of radiotherapy was studied in 52 patients with inoperable epidermoid lung carcinoma complicated by the III degree of pulmonary insufficiency. Among these patients, 40 had central tumors and 12 had peripheral tumors. The patients received split-course irradiations (200 rads/day, total dose 6,600-7,000 rads, with 3-4-wk interval after 3,000-3,200 rads). Prior to the treatment, the patients showed significant impairment of the respiration function. Of 52 patients, 47 completed radiotherapy, while in 5 irradiations were discontinued due to development of distant metastases. Improvement of the respiratory function was observed in 19/47 patients. Improvement of the spirographic parameters was achieved in 13/24 patients with lung atelectasis and in 6/23 patients without atelectasis. The 1-and 3-yr survival rates were 58% and 12%, respectively. (5 Refs) (In RUS)

44. NON-CROSS-RESISTANT CHEMOTHERAPY AND CONSOLIDATION RADIOTHERAPY FOR SMALL CELL CARCINOMA OF THE LUNG.

Young JA, Dillman RO, Seagren SL, Taetle R, Rentschler RE, Lea JW, Lehar TJ, Green MR, Stanton W, Mendelsohn J, Royston I
(c/o Dillman), Veterans Admin. Medical Center, 3350 La Jolla Village Dr., V-111 E, San Diego, CA, 92161
Cancer Treat Rep; 66(6):1399-1401 1982

Fifty-six patients with small cell carcinoma of the lung were treated with a two-cycle induction course of hexamethylmelamine, vincristine, doxorubicin, and cyclophosphamide. Patients with limited disease (LD) who responded and patients with extensive disease (ED) who had a complete response received prophylactic whole-brain radiotherapy, as well as radiotherapy to thoracic and abdominal sites of disease. Concurrently with radiotherapy, consolidation chemotherapy was given with doxorubicin, cyclophosphamide, methotrexate, and etoposide. The complete response rate was 35% for ED patients and 68% for LD patients. The median survival time for complete responders was 54 wk for ED patients and 65 wk for LD patients. The toxicity of the program was moderate, and the effectiveness was comparable to that of other reported combined-modality treatment programs. (Author abstract) (9 Refs)

45. LIMITED SQUAMOUS CELL CARCINOMA OF THE LUNG: A SOUTHWEST ONCOLOGY GROUP RANDOMIZED STUDY OF RADIATION WITH OR WITHOUT DOXORUBICIN CHEMOTHERAPY AND WITH OR WITHOUT LEVAMISOLE IMMUNOTHERAPY.

White JE, Chen T, Reed R, Mira J, Stuckey WJ, Weatherall T, O'Bryan R, Samson MK, Seydel HG
Southwest Oncology Group, Operations Office, c/o Cancer Treatment and Res. Center, 4450 Medical Dr., San Antonio, TX, 78229
Cancer Treat Rep; 66(5):1113-1120 1982

In 1976, the Southwest Oncology Group activated a four-arm randomized study of limited squamous cell carcinoma of the lung. The purpose of this study was to determine if doxorubicin and/or levamisole added to radiation therapy improved the local control rate and survival in patients with limited squamous cell carcinoma of the lung. Of the 107 eligible patients, 15 (14%) had complete responses and 20 (19%) had partial responses. When compared by chemotherapy, immunotherapy, and performance status, no statistically significant difference was found in response rates or in survival. Although not statistically significant, the survival and response rates of patients in the combined levamisole arms were shorter than those of patients in the combined arms not containing levamisole. Patients receiving radiation therapy alone had the best survival. The irradiated field was the site of failure in 68 (88%) of the 77 patients in whom the site of failure was specified. Fifty (65%) of the patients failed in the radiation therapy field only. Chemotherapy and/or immunotherapy as employed in this protocol were of no benefit. (Author abstract) (33 Refs)

46. COMBINATION CHEMOTHERAPY-RADIOTHERAPY WITH AND WITHOUT THE METHANOL-EXTRACTION RESIDUE OF BACILLUS CALMETTE-GUERIN (MER) IN SMALL CELL CARCINOMA OF THE LUNG. A PROSPECTIVE RANDOMIZED TRIAL OF THE PIEDMONT ONCOLOGY ASSOCIATION.

Jackson DV, Paschal BR, Ferree C, Richards F, Muss HB, Cooper MR, White DR, Stuart JJ, Spurr CL, Wells B, Sartiano G, McFarland J, McCulloch J
Bowman Gray Sch. Medicine, Wake Forest Univ., South Hawthorne Road, Winston-Salem, NC, 27103
Cancer; 50(1):48-52 1982

The effect of addition of the nonspecific immunostimulant, MER, to combined treatment with chemotherapy and radiotherapy in small cell carcinoma of the lung was evaluated in a prospective randomized trial involving 102 evaluable patients. Chemotherapy consisted of cyclophosphamide, Adriamycin, vincristine, methotrexate, and lomustine; and radiotherapy was administered to the primary lesion, mediastinum, supraclavicular areas, and whole brain. Of 47 patients administered MER 400 mcg intradermally every 6 wk, 12 (26%) attained complete remission with a median survival of 22.9 mo. Complete remission was observed in 17 (31%) of 55 patients who received no MER with a median survival of 20.0 mo (p greater than 0.05). Survival greater than or equal to 2 yr has been observed in five patients who received MER and two patients who did not receive MER. The response rate and duration, survival, and toxicity of the two treatment arms were similar with the exception of cutaneous and occasional systemic reaction to MER. MER as used in this study has not influenced the overall results of a combined modality treatment program for patients with small cell carcinoma of the lung. (Author abstract) (13 Refs)

47. RESULTS OF CHEMORADIOTHERAPY OF POORLY DIFFERENTIATED AND UNDIFFERENTIATED LUNG CANCER.

Abisatov KhA
Regional Oncological Dispensary, Gur'ev, USSR
Med Radiol (Mosk); 27(4):9-15 1982

The results of chemoradiotherapy in 126 patients (111 men, 15 women; 32-75 yr old) with poorly differentiated and undifferentiated lung cancer are reported. Nine patients had peripheral tumors and 117 had central tumors; 4 were in Stage II, 55 were in Stage III, and 67 were in Stage IV. All patients received distance gamma therapy: 200 rads/day, 5x/wk (82 patients) or 350-400 rads/day, 3x/wk (44). Of 126 patients, 45 (Group 1) received gamma therapy in combination with cyclophosphamide (1g, iv, 1x/wk). 41 (Group 2) received gamma therapy in combination with 5-fluorouracil (250 mg, 2 hr prior to small-fraction irradiation, or 500 mg, between the large-fraction irradiations), and 40 (Group 3) received gamma therapy alone. Complete tumor regression was achieved in 26.7% of the patients in Group 1, 17.1% of the patients in Group 2, and in 7.5% of the patients in Group 3. Immediate results of the treatment did not depend upon the method of dose fractionation. Local side-effects were more frequent after large-fraction irradiation. Av duration of survival in Groups 1, 2, and 3 was 14.5 mo, 14.8 mo, and 7.8 mo, respectively. (8 Refs) (In RUS)

48. EFFECTS ON PULMONARY FUNCTION OF WHOLE LUNG IRRADIATION FOR WILMS' TUMOUR IN CHILDREN.

Benoist MR, Lemerle J, Jean R, Rufin P, Scheinmann P, Paupe J
Laboratoire d'Exploration Fonctionnelle Respiratoire, Hopital des Enfants Malades, 149 rue de Sevres, 75730 Paris Cedex 15, France
Thorax; 37(3):175-180 1982

The effect of whole lung irradiation on lung function was investigated in 48 children treated for Wilm's tumor with pulmonary metastases. Lung function tests were performed before irradiation and were repeated annually for as long as possible, the length of follow-up varying from 2 to 17 years. A reduction in both lung volume and in dynamic compliance was clearly observed. In some patients these changes occurred in the early post-irradiation months, but in most the decrease observed progressed over longer periods of time. Static pressure volume curves, blood-gases, and carbon monoxide transfer were normal. These findings make it unlikely that postirradiation pulmonary fibrosis was involved. Another explanation for the decreased lung volume and dynamic compliance might be failure of alveolar multiplication. Muscular injury is unlikely as the patients were able to produce normal transthoracic pressures. A failure of chest wall growth is also possible and would explain the progressive restrictive impairment but not the early lung function changes. It is suggested that the early effects detected in some patients were the result of lung injury and that later effects resulted from impaired chest wall growth. (Author abstract) (19 Refs)

PRE-CLINICAL STUDIES

49. LOCAL HYPERTHERMIA THERAPY OF MALIGNANT BRAIN TUMOR USING RADIOFREQUENCY - EFFECTS ON SUBCUTANEOUSLY TRANSPLANTED EXPERIMENTAL BRAIN TUMOR.

Kim T, Tanaka R, Suzuki Y, Sekiguchi K, Yamada N, Saito Y
Dept. Neurosurgery, Brain Res. Inst., Niigata Univ., 1-757 Asahicho-dori, Niigata 951, Japan
Neurol Med Chir (Tokyo); 22(2):103-110 1982

Anti-tumor effects of radiofrequency hyperthermia on experimental malignant glioma of rats were examined. Radiofrequency electromagnetic fields at 13.56 MHz were used to heat locally subcutaneously-transplanted Rous sarcoma virus-induced rat gliomas. Temperature profiles during radiofrequency treatment showed that the temperature in the tumor was constantly higher by 2 to approx 5 C than that in the surrounding subcutaneous tissue. The tumor temperature was maintained at a stable level throughout the treatment by adjusting the radiofrequency power. Following results were obtained: (1) The critical temperature to bring anti-tumor effects such as delay of tumor growth or extension of the survival of the animals was 43 C. (2) Longer or repeated heating enhanced the anti-tumor effects. (3) Combined therapy consisting of radiofrequency hyperthermia and 60Co-irradiation or an anticancer drug, ACNU (1-(4-amino-2-methyl-5-pyrimidinyl) methyl-3-(2-chloroethyl)-3 nitrosourea), showed greater anti-tumor effects than hyperthermia only. (Author abstract) (37 Refs) (In JPN)

50. EFFECT OF HYPERTHERMIA ON HYPOXIC CELL FRACTION IN TUMOR.

Song CW, Rhee JG, Levitt SH
RAdiation Biology Section, Dept. Therapeutic Radiology, Univ. Minnesota Medical Sch., Box 494 Mayo, Minneapolis, MN, 55455
Int J Radiat Oncol Biol Phys; 8(5):851-856 1982

Effect of hyperthermia on the hypoxic cell fractions and the response of tumors to subsequent radiation were investigated in the SCK mammary carcinoma of A/J mice. The survival curve for tumors of the air-breathing animals showed a diphasic response consisting of an initial slope at the lower doses and a more gradual slope at the higher doses. The degree of displacement of the survival curves of tumor cells irradiated at 3, 5, 12, and 24 hr after heating at 43.5 C for 30 min suggested a dynamic change in the hypoxic cell fraction in tumors after hyperthermia. The hypoxic fraction increased steadily after hyperthermia reaching close to 0.95 at 5 hr posthyperthermia. The increase was statistically significant. The hypoxic fraction then decreased to approx 0.6 at 12 hr and remained at the same level at 24 hr post-heating. The hypoxic fraction at 24 hr post-heating was statistically smaller than that at 5 hr, but was not significantly different from the hypoxic fraction in the unheated control tumors. The clonogenic cell number in SCK tumors prior to heating was 49.3 x 10(6) cell/g; 22.2 x 10(6) cells/g were hypoxic. The numbers of total clonogenic and hypoxic cells decreased respectively to 1.29 x 10(6) cell/g and 1.23 x 10(6) cell/g 5 hr after hyperthermia. Results showed that the tumor cells which survived the heat damage were more radiosensitive than the cells in unheated control tumors during 3-5 hr post-heating. However, at 12 and 24 hr after hyperthermia, the tumor cells appeared to be slightly radioresistant relative to the unheated control tumor cells. (38 Refs)

51. THERMAL DISTRIBUTION OF MAGNETIC-LOOP INDUCTION HYPERTHERMIA IN PHANTOMS AND ANIMALS: EFFECT OF THE LIVING STATE AND VELOCITY OF HEATING.

Storm FK, Harrison WH, Elliott RS, Silberman AW, Morton DL
Univ. California, 54-140 CHS, Los Angeles, CA, 90024
Int J Radiat Oncol Biol Phys; 8(5):865-871 1982

Patterns of energy deposition in static homogenous and heterogenous normal tissue equivalent and animal normal tissue phantoms were evaluated and the internal thermal distribution provided by magnetic induction in live, healthy animals was delineated. Radio-frequency magnetic-loop applicators were used. Results of placing the homogeneous animal tissue phantom concentrically and acentrically, and of placing the heterogeneous animal tissue phantom concentrically within the magnetrode are shown. Dead animal extremity phantom demonstrated preferential peripheral heating similar to that observed in tissue equivalent and artificial homogeneous and heterogeneous animal tissue phantoms, though altered heat distribution was noted in some areas. With moderate (250 watts) heating over 10 min, all surface tissues in living animal models remained within a physiologically tolerable temperature range, with nearly uniform heating of peripheral internal (liver, kidney) and central internal (spleen) organs. In contradistinction to the observation in phantoms, potentially tumoricidal temperatures greater than or equal to 42 C occurred in both peripheral and central organs to a nearly equivalent degree in the live animal. However, significant injurious peripheral organ heating was observed within a central 'cold spot' similar to that in phantom models. Results from magnetic-loop induction hyperthermia in live, healthy animals suggested that magnetrode hyperthermia can provide safe and effective deep heat. (14 Refs)

REVIEWS

52. RADIOTHERAPY TREATMENT PLANNING.

Mould RF
Dept. Medical Physics, Westminster Hosp., London, England
Med Phys Handb (7): 204 pp., 1982.

External beam radiotherapy treatment planning is reviewed, with emphasis on the diagrammatic representation of radiation dose patterns from different combinations of radiation fields. The method has been adopted because similar dose shapes are obtained for similar beam configurations, regardless of the size of the anatomical cross section. Superficial and deep therapy, megavoltage x-ray machines, and megavoltage cobalt-60 machines are described. Exposure, absorbed dose, and activity of radiation units are presented. The first 1 cm, central axis, off-axis regions, lead shielding, wedge filters, and obliquity and inhomogeneity problems of the single isodose curve are discussed. The multiple-field isodose curve pattern is considered with respect to isodose curve notation; patient outline and localization of the target vol; two-, three-, four-, five-, and six-field plans; beam direction; rotation therapy; mantle treatment fields; and treatment simulation. External beam therapy machines, electron beam isodose curves, and plans in electron beam therapy are discussed. Constant focus-skin distance/

source-skin distance treatment calculation using percentage depth doses, constant source-axis distance treatment calculation using tissue/air ratios, and two-target vol treatments are presented. Manual addition of isodose curves, a topic sometimes ignored due to the availability of computerized radiotherapy treatment planning systems but one which is nevertheless a useful teaching aid and also a prerequisite for certain examinations, is described. (no Refs)

53. NUCLEAR PARTICLES IN CANCER TREATMENT.

Fowler JF
Gray Lab., Mount Vernon Hosp., Northwood, Egnland
Med Phys Handb (8): 178 pp., 1982.

Recent progress in the treatment of cancer patients using nuclear particle accelerators is reviewed. Radiobiological and physical principles are outlined, and various types, sources, and properties of the particle beam are described. Methods of treating cancer are discussed, including methods other than radiotherapy (RT), current developments in RT, and methods of dealing with hypoxic cells in tumors. Types of radiation and their sources are considered, including neutrons, fast-neutron RT, deuterium-tritium generators, cyclotron production of fast-neutron beams, charged particle accelerators, proton beams, other ion beams, design for dedicated medical ion accelerators, pi meson production, and the spallation neutron source. Absorbed dose and kerma, methods of measuring neutron dose, properties of neutron beams investigated by dosimetry, and dose measurements for heavy charged particle beams and for negative pions are presented. Clinical experience with fast neutrons, charged particles, negative pi mesons, and general problems in clinical trials of cancer treatment are discussed. Cost of neutron, charged particle, and pion installations is presented. Radiobiological and physical properties of beams available for RT are discussed. Heavy charged particle RT is expected to improve RT because further improvements in depth dose distributions permit delivery of higher doses to the target vol containing the tumor and/or lower doses to surrounding normal tissues; biological advantages are expected from the use of densely ionizing radiation. (112 Refs)

54. PROTON BEAM THERAPY.

Verhey LJ, Munzenrider JE
Dept. Radiation Medicine, Massachusetts General Hosp., Boston, MA, 02114
Ann Rev Biophys Bioeng; 11:331-357 1982

Physical properties and biology of proton beams (PB), clinical physics, clinical PB radiation therapy, and fractionated radiation therapy of human malignancies are reviewed. Dose depth distributions, inhomogeneities, scattering effects, and absolute dose determination are discussed. The facilities and treatment planning techniques currently used by the Harvard Cyclotron Laboratory-Massachusetts General Hospital group are described; similar considerations are applicable to the general problem of treatment planning for heavy ion or proton radiation therapy at other facilities. Because protons are predominantly a low linear energy transfer radiation modality with radiobiological effectiveness (RBE) only slightly greater than unity, human clinical trials are considered justified; the rationale for such trials is that the improved dose distributions possible with PB therapy result in better rates of local control in human malignancies. Results of fractionated human radiotherapy with PB are summarized. Experience with 272 patients treated with fractionated proton therapy at the Harvard Cyclotron confirms that PB therapy in humans is feasible and can be conducted without untoward or unexpected acute or chronic normal tissue reactions. Normal tissue and tumor responses observed in the patients were consistent with an RBE of 1.1 for protons relative to 60Cobalt gamma rays. PB therapy is thought to be the treatment of choice for medium and large uveal melanomas and for para-CNS sarcomas abutting critical normal structures. (42 Refs)

55. FAST NEUTRON RADIATION THERAPY.

Cohen L, Awschalom M
Neutron Therapy Facility, Fermilab, Batavia, IL, 60510
Ann Rev Biophys Bioeng; 11:359-390 1982

Physical characteristics, dosimetry, and generation of neutron beams (NB); modern clinical facilities; neutron radiobiology; relative biological effectiveness and oxygen enhancement ratio; clinical implications; role of the oncology data base; and results of NB therapy are reviewed. The primary impact of ionizing radiation is on the reproductive integrity of cells. Sharply defined and specific endpoints can be identified in intact tissues when depletion of their constituent cell populations reaches a critically low value. Tumors unlikely to respond to conventional doses of radiation therapy can be identified by histological type, extent of disease, and contiguity with radiosensitive or critical organs. Radioresistant tumors include the adenocarcinomas of the gastrointestinal tract, soft-tissue and bone sarcomas, melanoma, and high grade malignant tumors of the CNS. In addition to these intrinsically radioresistant tumor types, the relatively responsive epidermoid cancer, which can readily be eradicated when the tumor is small, becomes radioresistant at later stages of growth. The combined experience of neutron therapy installations throughout the world totals some 6,000 patients treated for a wide variety of late stage malignant tumors; results for patients with particularly radioresistant tumors, in whom good long-term responses have been observed, are summarized. One advantage of the NB unit is the practical feasibility of reduced fractionation in radiotherapy. A 6-wk course of therapy can be reduced to 7 or 13 fractions (1/wk or 2/wk), instead of the 30 fractions required with conventional radiation therapy. (64 Refs)

56. LOCALIZED HYPERTHERMIA IN THE TREATMENT OF CANCER.

Storm FK, Morton DL
Div. Surgical Oncology, Dept. Surgery, UCLA Sch. Medicine, Univ. California, Los Angeles, CA, 90024
Int Adv Surg Oncol; 5:261-275 1982

Thermosensitivity of tumor cells, mechanisms of thermal kill, selective tumor heating, localized hyperthermia techniques, tumor heating capacity, histopathologic and gross morphologic effects of heat, dose/response of thermal therapy, local and systemic toxicity, immune correlatives, and future hyperthermia potential are discussed. Localized hyperthermia techniques are water bath, isolated limb perfusion, low-frequency current fields, ferromagnetic coupling, ultrasound, microwaves, and radio frequency waves. A clinical trail was preformed for patients with advanced cancer who did not respond to standard methods of therapy, including surgery, radiation therapy, chemotherapy, or combination therapy. Of 89 tumors evaluated in skin, sc tissue, muscle, intraabdominal viscera, intrathoracic viscera, or bone, temperatures greater than or equal to 42 C were possible in 69 tumors, greater than or equal to 45 C in 32, and greater than or equal to 50 C in 22, whereas normal tissue remained within a physiologic temperature range of less than 45 C. In 22 of these tumors, the central tumor temperature was compared to that of the normal tissue/tumor interface. In two

no difference was observed, in nine the difference was less than or equal to 1 C, in five the difference was less than or equal to 1.5 C, in three less than or equal to 2.5 C, and in three was 3.5-9 C difference. Reports suggested that potentially effective hyperthermia can be achieved in most superficial and visceral solid human tumors regardless of histopathologic type, although it is most effective for large tumors. Local toxicity depends upon the heat dose and the method of hyperthermia. (58 Refs)

AUTHOR INDEX WITH CITATION NUMBERS

Abate G. 39
Abayomi O. 17
Abe H. 7
Abisatov KhA. 47
Alseoudi M. 33
Anderson B. 17
Andreucci L. 20
Apice G. 39
Appelqvist P. 15
Ariel IM. 12
Au F. 10
Awschalom M. 55
Bagshaw Ma. 24
Balikdjian D. 2
Barricks M. 22
Beale F. 34
Bennett JM. 4
Benoist MR. 48
Black BE. 19
Blackstein M. 34
Boivin JF. 37
Borgelt BB. 9
Bron D. 38
Bryce D. 34
Buckner CD. 40
Bugat R. 13
Bush RS. 19
Bush SE. 24
Calle R. 1
Carbone A. 27
Castello G. 39
Castro JR. 22
Chaillet MP. 33
Char DH. 22
Chen GT. 22
Chen T. 45
Chenal C. 33
Chiesa F. 26
Chu AM. 3
Cionini L. 20
Clark R. 34
Clift RA. 40
Cohen L. 55
Combes PF. 13
Comella G. 39
Comella P. 39
Cooper MR. 46
Coucourde F. 39
Crawford JB. 22
Crivellari D. 27
Cummings B. 34
Cummings BJ. 19
Curioni C. 30
De Marie M. 23
Dillman RO. 44
Ditlow R. 10
Eigler FW. 11
Elliott RS. 51
Emami B. 17
Fefer A. 40
Ferree C. 46
Fitzpatrick P. 34
Fleischer J. 36
Fleming TJ. 35
Fornasier VL. 41
Fowler JF. 53
Franklin CI. 25
Frustaci S. 27
Fukuda M. 6
Galligioni E. 27
Gasparini M. 23
Gennaro AR. 10
Gianni C. 23
Giordano GG. 39
Goitein M. 21
Goncharova IM. 43
Gragoudas ES. 21
Green MR. 44
Grigoletto E. 27
Gross E. 11
Harrison WH. 51
Harwood A. 34
Harwood AR. 41
Herrmann T. 36
Herskovic A. 5
Hersman J. 40
Higuchi M. 7
Hilton GF. 22
Horiuchi J. 29
Hutchison GB. 37
Irvine AR. 22
Itoh T. 7
Iwasaki Y. 7
Jackson DV. 46
Jean R. 48
Kaneda K. 7
Karibov IuI. 42
Keane T. 34
Kenis Y. 38
Kharchenko VP. 42
Kiel K. 3
Kim T. 49
Kinomoto H. 7
Kliman M. 41
Klimenko AA. 42
Koehler A. 21
Lea JW. 44
Lehar TJ. 44
Lemerle J. 48
Lesche A. 36
Levitt SH. 50
Lim N. 10
Ling C. 8
Lombardi F. 23
Lonn LI. 22
Losev SI. 42
Lymon JT. 22
Magri MD. 27
Maraggia A. 30
Marneur M. 33
McCulloch J. 46
McFarland J. 46
McGuffin R. 40
Mendelsohn J. 44
Mira J. 45
Molinari R. 23
Molinari R. 26
Morozov AI. 14
Morton DL. 51
Morton DL. 56
Mould RF. 52
Mungai R. 20
Munzenreider J. 21
Munzenrider JE. 54
Muss HB. 46
Nakagawa Y. 7
Nguyen TD. 13
Nizri D. 33
Nurmagomedov AM. 28
O'Bryan R. 45
Okuyama T. 29
Onsrud M. 18
Ornitz RD. 5
Osoba D. 34
Pacini P. 20
Padula E. 30
Padula G. 12
Paschal BR. 46
Patel HR. 8
Paupe J. 48
Payne D. 34
Pergola M. 39
Pilleron JP. 1
Pilotti S. 23
Pirtoli L. 20
Pokas LV. 42
Prakash A. 16
Prilepo VN. 14
Pronin VI. 14
Quivey JM. 22
Rath GK. 16
Rauth AM. 19
Rebrikova ID. 43
Reed R. 45
Rentschler RE. 44
Renzi R. 20
Rhee JG. 50
Richards F. 46
Rider WD. 34
Rogers CC. 5
Rogers CC. 8
Romsdahl MM. 9
Roncadin M. 27
Royston I. 44
Rozanov IuL. 14
Rubin P. 4
Rufin P. 48
Saito Y. 49
Salazar OM. 4
Salmo M. 15
Samson MK. 45
Sanders JE. 40
Sarantseva IP. 28
Sartiano G. 46
Saunders W. 22
Saxton JP. 9
Schatz HA. 22
Scheinmann P. 48

Schere E. 11
Schulz U. 11
Schwartz A. 22
Scoppa G. 39
Seagren SL. 44
Sekiguchi K. 49
Seydel HG. 45
Sharma LK. 16
Sharma U. 16
Shell M. 5
Shibuya H. 29
Silberman AW. 51
Singhal RM. 16
Smith JW. 40
Song CW. 50
Sorenti VL. 19
Sorrenti V. 34
Spurr CL. 46
Stanton W. 44
Stewart P. 40
Stone RD. 22
Storb R. 40
Storm FK. 51
Storm FK. 56
Stuart JJ. 40
Stuckey WJ. [illegible]
Suit H. 21
Suzuki Y. 49
Szpirglass H. 33
Taetle R. 44
Tak W. 17
Takeda M. 29
Tanaka R. 49
Tanaka R. 6
Tannock I. 34
Tashiro K. 7
Thomas ED. 40
Thomas GM. 19
Tirelli U. 27
Touboul E. 33
Trovo MG. 27
Trujillo NP. 8
Tsuchida T. 6
Tsuru M. 7
Tumolo S. 27
Urie M. 21
VanHoutte PJ. 4
Vanderlinden B. 38
Verhey L. 21
Verhey LJ. 54
Veronesi A. 27
Vider M. 10
Volterrani F. 26
Vorob'ev IuI. 28
Wang CC. 31
Weatherall T. 45
Wechsler-Jentzs. 8
Wells B. 46
Wheeler KT. 4
White DR. 46
White JE. 45
Withers HR. 9
Wolf H. 36
Yamada N. 49
Young JA. 44
Zarrilli D. 39
Zhakov IG. 43
Zhakova LA. 43
Zum Winkel K. 32
Zverev MP. 14

VIDEOTAPES

ON CURRENT TOPICS IN CANCER RESEARCH

A pilot project of the International Cancer Research Data Bank (ICRDB) Program of the National Cancer Institute

Three series are available . . .

THE RELATION OF CARCINOGEN ACTION ON DNA TO CELL TRANSFORMATION

PETER MAGEE Fels Research Institute	*Keynote Address*	#VK01 28 min.
JAMES K. SELKIRK Oak Ridge National Laboratories	*Metabolic Activation and Macromolecular Binding of Chemical Carcinogens*	#VK02 51 min.
PHILIP C. HANAWALT Stanford University	*Cellular Responses to Damaged DNA*	#VK03 54 min.
CHARLES HEIDELBERGER University of Southern California	*Mutagenesis and Oncogenic Transformation of Mouse Embryo Cells*	#VK04 54 min.
FRED RAPP Milton S. Hershey Medical Center	*The Interaction of Herpesviruses and Host Cells Leading to Latency or Transformation*	#VK05 52 min.
	Panel Discussion	#VK06 31 min.

MECHANISMS OF METASTASIS

ISAIAH FIDLER Frederick Cancer Research Center	*The Heterogeneous Nature of Cancer Metastasis and Implications for Therapy*	#VB01 47 min.
GEORGE POSTE Smith, Kline and French Laboratories	*Phenotypic Analysis of Metastatic Cell Populations*	#VB02 42 min.
LANCE LIOTTA National Cancer Institute	*Tumor Cell Invasion of Basement Membranes and Extracellular Matrices*	#VB03 33 min.
EVERETT SUGARBAKER Miami Cancer Institute	*Some Clinical Characteristics of Metastasis in Man*	#VB04 41 min.

AUTOMATED CYTOLOGY

Part One: Principles and Techniques	#VB05 56 min.
Part Two: Biological Applications	#VB06 52 min.

VIDEOTAPES ON CURRENT TOPICS IN CANCER RESEARCH are in the 3/4" U-matic format and can be played on video equipment which accepts the NTSC standard (the standard for videotapes produced in the U.S.). The two Automated Cytology tapes (#VB05 and #VB06) are also available in the PAL format.

The videotapes are available on a loan basis. If you would like to schedule viewing for your group, or for more information, please write to:

Videotape Coordinator
ICRDB Program
Westwood Building, Room 10A18
Bethesda, MD 20205

Please specify three choices for viewing dates, and the tapes desired.

CANCER LINE

More Than Just A Fancy Name

Mention CANCERLINE to your librarian and the world's foremost collection of cancer information is at your disposal. With the help of this computerized data system, you can obtain information on the following:

Cancer Literature

The literature date base, **CANCERLIT**, allows you to survey more than 3,000 biomedical journals for information on your topic of interest. Your search will also alert you to meeting proceedings, monographs, and books published in that area. Informative abstracts averaging 200 words are provided with each citation;

Current Cancer Research

The data base **CANCERPROJ** allows you to retrieve descriptions of current work in any cancer research area. The descriptions, which state research objective, methodology, and experimental results, are supplied for projects underway in 77 countries around the world.

Cancer Therapy Protocols

The **CLINPROT** section of CANCERLINE is designed primarily for clinicians. It provides detailed summaries of currently active experimental protocols for any cancer site, agent, or type.

Ask your biomedical librarian about CANCERLINE.

CANCERLINE is sponsored by the International
Cancer Research Data Bank—a program of the
National Cancer Institute.

CANCERLINE

Keep Up with the Cancer Literature

Each Month You Can Receive Abstracts Covering Your Specialty Area

- This convenient service — called Auto SDI* — is as near as your nearest biomedical library. Discuss your research interests with the librarian who will design an appropriate search strategy.
- Abstracts of the latest published literature are searched automatically each month and those related to your interests are delivered to you on a regular basis.
- The abstracts you receive are selected from more than 4,000 monthly entries made into CANCERLIT — the extensive cancer literature data base of the National Cancer Institute.

Talk With Your Librarian About the Auto SDI Service TODAY.

---

*Auto SDI stands for Automatic Selective Dissemination of Information. It is a service provided to you, at minimal cost, by the International Cancer Research Data Bank (ICRDB) — a part of the National Cancer Institute.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1982-381-847:203

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

U.S.MAIL

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616

CT 15/82/12

NCI/ICRDB/CT15 82/12

PB82-939012

ICRDB CANCERGRAM

CLINICAL TREATMENT OF CANCER

Radiation Therapy

SERIES CT15 No. 82/12

DECEMBER, 1982

This Cancergram is a service of the INTERNATIONAL CANCER RESEARCH DATA BANK (ICRDB PROGRAM of the U.S. National Cancer Institute. Every few weeks, an updated Cancergram containing abstract of selected cancer-related articles recently published in more than 3000 journals, and dealing with the topic indicate by the above title, is sent to researchers working in this area. These researchers are identified on the basis of th description of their current research project that has been submitted to the ICRDB Program, directly or via granting agencies.

This Cancergram is prepared by the Cancer Information Dissemination and Analysis Center (CIDAC) for Diagnosis and Therapy *If this Cancergram is useful and valuable, please send your comments to the CIDAC address belov since future editions depend on user satisfaction and user needs:*

CIDAC FOR DIAGNOSIS AND THERAPY
M. D. ANDERSON HOSPITAL AND TUMOR INSTITUTE
6723 BERTNER AVENUE
HOUSTON, TX 77030

Consulting reviewer:
HOWARD T. BARKLEY, Jr., M.D.

NEWARK PUBL'C LI

NOV 17

U. S. GOVT. PUBS.
DEPOSITORY 376

In this issue:

- BREAST NEOPLASMS 1-5
- CENTRAL NERVOUS SYSTEM NEOPLASMS 6-9
- DIGESTIVE NEOPLASMS 10-15
- GYNECOLOGIC NEOPLASMS 16-18
- HEAD AND NECK NEOPLASMS 19-35
- HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS 36-42
- MUSCULOSKELETAL NEOPLASMS 43-44
- RESPIRATORY AND CARDIOVASCULAR NEOPLASMS 45-47
- INSTRUMENTATION AND TECHNOLOGY 48-49
- PRE-CLINICAL STUDIES 50-51
- REVIEWS 52-55

BREAST NEOPLASMS

1. RADIATION THERAPY PLANNING BASED ON PARASTERNAL LYMPHOSCINTIGRAPHY IN PATIENT WITH BREAST CANCER.

Ohtake E
Dept. Nuclear Medicine and Radiological Sciences, Tokyo Metrop
tan Geriatric Hosp., Tokyo, Japan

Nippon Igaku Hoshasen Gakkai Zasshi; 42(3):288-302 1982

Planning parasternal lymph node radiotherapy was stud
in 24 breast cancer patients (women; 26-76 yr old) with aut
sy-verified lymph nodes. Simple mastectomy had been p
formed in 2 of the patients and radical mastectomy in 21. F
asternal lymphoscintigraphy was performed in all of the
tients 4 hr after bilateral subcostal injection of 99mTc-su
colloid or 99mTc-antimony sulfide colloid. Location of
lymph nodes was observed with the aid of a conventional
allel hole collimator and a bilateral collimator. The width
tween the right and left parasternal lymph nodes was 5.6 +
cm (range 4.1-7.7 cm), and the lateral distance from the ce
of the sternum to the lymph nodes was 2.3 +-0.8 cm (ra
0.7-5.2 cm); the lateral distance tended to be wider on the r

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service • National Institutes of Health • National Cancer Institute

HE 20. 3173/2:

side than on the left. The depth of the lymph nodes from the body surface was 2.3 +-0.7 cm (range 0.9-4.3 cm), and the depth of the lymph nodes increased with respect to the degree of obesity of the person. Retrospective study indicated that 59% of the parasternal lymph nodes were within the radiation field and 19% of the lymph nodes were seated within 1 cm of the intended depth of radiation penetration. This suggested that parasternal lymphoscintigraphy might be performed prior to radiotherapy to determine the location and depth of the parasternal lymph nodes. (56 Refs) (In JPN)

2. UTILIZATION OF PARASTERNAL LYMPHOSCINTIGRAPHY IN RADIATION THERAPY OF BREAST CARCINOMA.

Siddon RL, Chin LM, Zimmerman RE, Mendel JB, Kaplan WD
Joint Center for Radiation Therapy, Harvard Medical Sch., Boston, MA, 02115
Int J Radiat Oncol Biol Phys; 8(6):1059-1063 1982

A new lymphoscintigraphy localization technique which does not depend upon the shape of the sternum, the patients transverse contours, or the entrance of the medial tangential field is described. The technique only indicates if the nodes are included in the treatment field or not. Changing the position of the ipsilateral arm from at the patient's side to above the head (treatment position) can change the positions of the lymph nodes by a few mm. The isocenter should be positioned approx 3 mm above the skin to insure alignment with the simulator. (10 Refs)

3. POSTOPERATIVE RADIATION THERAPY FOR CARCINOMA OF THE BREAST: IMPROVED RESULTS WITH ELECTIVE IRRADIATION OF THE CHEST WALL.

Toonkel LM, Fix I, Jacobson LH, Schneider JJ, Wallach CB
Dept. Radiotherapy, Mount Sinai Medical Center, 4300 Alton Road, Miami Beach, FL, 33140
Int J Radiat Oncol Biol Phys; 8(6):977-982 1982

Differences in patient characteristics and outcome of therapy for patients irradiated postoperatively to either the peripheral lymphatics or the peripheral lymphatics and the chest wall were evaluated in 926 patients with carcinoma of the breast. One hundred seventy-five patients with Stage I disease were treated postoperatively; 119 patients receiving peripheral lymphatic treatment had 5 and 10 yr survival probabilities of 83% and 58%, respectively. Fifty-six patients receiving chest wall and peripheral lymphatic treatment showed survival probabilities of 90% and 74% at 5 and 10 yr. Five and 10 yr survival figures for 217 Stage II patients receiving peripheral lymphatic treatment only were 54% and 36% compared with 71% and 49% for 275 patients treated with peripheral lymphatic plus chest wall irradiation; the difference was statistically significant. For 26 Stage III patients receiving peripheral lymphatic irradiation alone, the 5 and 10 yr survival probabilities were 32% and 15%, significantly less than those observed for 213 patients in the chest wall group (51% and 38%). Similar differences were observed for disease-free survival. A marked enhancement in local control for Stage III patients was seen with the addition of chest wall irradiation: 5 and 10 yr figures remained constant at 61% for the peripheral lymphatic group and 79% for the peripheral lymphatic plus chest wall group. Since microscopic residual disease within the soft tissues of the chest wall can metastasize without necessarily manifesting as regionally recurrent disease, postoperative irradiation of the chest wall is recommended for selected patients after radical surgery for breast cancer. (24 Refs)

4. BREAST CANCER: A 21 YEAR EXPERIENCE WITH CONSERVATIVE SURGERY AND RADIATION.

Clark RM, Wilkinson RH, Mahoney LJ, Reid JG, MacDonald WD
Princess Margaret Hosp., 500 Sherburne St., Toronto, Ontario M4X 1K9, Canada
Int J Radiat Oncol Biol Phys; 8(6):967-975 1982

Six hundred and eighty patients with breast cancer (pathological Stage I and II) were treated by partial mastectomy and, in some, breast irradiation, and followed for 21 yr. None of the patients had clinical evidence of nodal involvement in the axilla or supraclavicular lesions. The age distribution was typical with 23% patients 65-75 yr old at diagnosis and 24% less than 45 yr old. The overall actuarial survival at 5 yr was 78% and at 10 yr 62%. Relative survivals were 83% and 71%, respectively. In the series, 55/177 deaths (31%) were a result of causes other than breast carcinoma. The commonest cause of death was cardiac disease (30 patients). Patients 35-65 and greater than 70 yr old had the best survival. Among the 154 patients who had no radiation, 57% were pathologically T1 and 14% were T2; corresponding percentages among the 526 patients who had radiation were 43% and 23% respectively. When comparing survival with tumor size, no significant difference in survival by T stage was observed. Patients with pathological T1 tumors, however, had an actuarial survival rate of 83% at 5 yr and 63% at 10 yr. In those patients where only the breast was irradiated the relapse rate was 7.6% at 5 yr. The relapse rate was 12.3% if the breast and any nodal group was irradiated. With no radiation to the breast the relapse rate was 24.4% despite a larger proportion of patients with more favorable disease. By 10 yr the relapse rates rose to 16.3%, 21.5%, and 26.5%, in patients with irradiation to the breast only, the breast plus nodes, and in patients not irradiated, respectively. Relapse in the breast alone was not detrimental to survival if treated appropriately. These findings support conservative management of patients with operable breast cancer. (30 Refs)

5. LOCAL RECURRENCE OF BREAST CARCINOMA AND RADIATION THERAPY: CONSIDERATION OF TREATMENT PORTALS FOR RECURRENT LESIONS.

Matsubara S, Suzuki H, Shibuya H, Okuyama T, Horiuchi J
Dept. Radiology, Tokyo Medical and Dental Univ. Sch. Medicine, Tokyo, Japan
Nippon Igaku Hoshasen Gakkai Zasshi; 42(2):152-159 1982

Effects of radiotherapy for recurrent breast cancer were studied in 13 patients with localized and 23 with widely distributed recurrence or metastasis. The pathohistological types of recurrent tumors included 17 scirrhous carcinomas, 11 papillotubular carcinomas, 6 medullary tubular carcinomas, 1 mucous carcinoma, and 1 lobular carcinoma. Of the 13 patients with localized recurrence or metastasis, 4 had lymph node metastasis, 4 had nodular skin recurrence, 3 had invasive skin recurrence, 1 had sternal metastasis, and 1 had costal metastasis. Of the 23 with widely distributed recurrence or metastasis, 14 had invasive skin recurrence, 7 had nodular skin recurrence, and 2 had lymph node metastasis. Patients were treated with telecobalt or betatron radiotherapy. The 5-yr survival rate of the patients with localized recurrence was 62.9%. The localized tumor control rate was 84.6%. On the other hand, all of the patients with widespread recurrence died within 38 mo. Active recurrent tumor growth was observed more often in the areas of skin that were irradiated than in the areas that were not irradiated. Injection of Evans blue stain in the areas of recurrence indicated that lymphatic flow was altered by mastectomy. Thus, when performing radiotherapy for recurrence and metastasis, the lymphatic flow should be carefully investigated to insure a radiation field sufficiently large to account for the lymphatic flow. (19 Refs) (In JPN)

CENTRAL NERVOUS SYSTEM NEOPLASMS

6. COMPUTED TOMOGRAPHY-DIRECTED STEREOTAXY FOR BIOPSY AND INTERSTITIAL IRRADIATION OF BRAIN TUMORS: TECHNICAL NOTE.

Mackay AR, Gutin PH, Hosobuchi Y, Norman D, Ballard DE, Jacques S
Brain Tumor Res. Center, Dept. Neurological Surgery, Sch. Medicine, Univ. California, San Francisco, CA
Neurosurgery; 11(1,part1):38-42 1982

A localizing system was designed which integrated the Leksell stereotactic frame with a General Electric 8800 computed tomography scanner to improve 125I source placement (28 procedures) or for performance of biopsy (2 procedures) in malignant brain tumors. All selected targets were reached precisely, permitting accurate diagnosis and treatment. (7 Refs)

7. INFRATENTORIAL GLIOBLASTOMA: THE ROLE OF NEURAXIS IRRADIATION.

Kopelson G, Linggood R
Dept. Radiation Oncology, Salem Hosp., 81 Highland Ave., Salem, MA, 01970
Int J Radiat Oncol Biol Phys; 8(6):999-1003 1982

The natural history of infratentorial glioblastoma was studied in 15 patients with biopsy proven infratentorial (8 cerebellum, 2 brainstem, 5 intramedullary spinal cord) glioblastoma to assess the need for routine neuraxis irradiation in such patients. An overall actuarial survival rate of 14% at 5 yr was achieved with prognosis being relatively better for low-grade lesions and for tumors in the cerebellum. Of the eight cerebellar patients, brainstem invasion was present at initial presentation in three. Upper cervical spinal cord involvement by direct extension occurred in one patient at exploration and in another at autopsy. In one patient the initial pathology specimen showed microscopic leptomeningeal invasion. No patient developed clinical subarachnoidal seeding, and three autopsies were negative for subarachnoid spread. The one irradiated brainstem patient died at 10 mo of clinically recurrent tumor confined to the primary site. The other patient had a tumor which initially involved the upper cervical spinal cord by direct extension; death occurred within 1 mo because of uncontrolled regional disease with no evidence of subarachnoid dissemination. No spinal cord patient showed evidence at presentation of spread beyond the primary tumor site, and intracranial subarachnoid spread was not apparent clinically in any patient, although no autopsies were performed. Local tumor recurrences were confined to the prior local irradiation portal. Results suggested that routine craniospinal axis irradiation may not be indicated for most patients with infratentorial glioblastoma. (41 Refs)

8. SUCCESSFUL TREATMENT OF CUSHING'S DISEASE USING YTTRIUM-90 RODS.

White MC, Doyle FH, Mashiter K, Joplin GF
Royal Postgraduate Medical Sch. Hammersmith Hosp., London W12 0HS, England
Br Med J; 285(6337):280-282 1982

Interstitial irradiation using yttrium-90 (90Y) rods implanted by needle into the pituitary gland was used as primary treatment in 16 patients with pituitary dependent Cushing's disease. Clinical and biochemical remission was observed within 3 to 6 mo in 13 and in the remaining 3 after a supplementary implant. There was no perioperative morbidity. Follow-up from the time of definitive operation ranged from 6 to 123 mo (mean 39). No recurrence has been observed. The return of a normal diurnal cortisol rhythm has been observed in 10/12 patients studied after remission. Some form of long-term pituitary hormone replacement therapy was required in only the six patients who had received that largest irradiation dose. Implantation of 90Y is safe and effective treatment for patients with Crushing's disease, comparing favorably with selective trans-sphenoidal pituitary surgery. (Author abstract) (19 Refs)

9. TOLERANCE OF THE CENTRAL NERVOUS SYSTEM TO PHOTON IRRADIATION. ENDOCRINE COMPLICATIONS.

Wigg DR, Murray RM, Koschel K
Radiotherapy Dept., Royal Adelaide Hosp., North Terrace, Adelaide 5000, Australia
Acta Radiol Oncol Radiat Phys Biol; 21(1):49-60 1982

Dose-response isoeffect equations have been determined for hypothalamic pituitary insufficiency following cranial irradiation. Of particular importance is the occurrence of complications at doses substantially less than those commonly used for the treatment of central nervous system tumors. Such complications may be severe and potentially life threatening. These complications occur when a small midline 'target' vol containing the pituitary gland, infundibulum and adjacent inferior hypothalamic structures is irradiated. Direct pituitary irradiation is unlikely to be a factor, at least in some cases. The possible role of incidental hypothalamic irradiation in the control of acromegaly and pituitary dependent Cushing's syndrome is discussed. (Author abstract) (53 Refs)

DIGESTIVE NEOPLASMS

10. RESULTS OF RADICAL RADIOTHERAPY OF SQUAMOUS CELL CARCINOMA OF THE OESOPHAGUS.

Newaishy GA, Read GA, Duncan W, Kerr GR
Dept. Clinical Oncology, Western General Hosp. and Royal Infirmary, Edinburgh, Scotland
Clin Radiol; 33(3):347-352 1982

A retrospective study was undertaken of 444 patients who were referred with squamous cell carcinoma of the esophagus during the period January 1956 to December 1974 and who were treated by radical radiotherapy. The overall crude survival rate at 5 yr was 9.0% which is similar to the results of most series reported from other centers and compares favorably with the results of radical surgery. The crude 5 yr survival rate was 5.7% for males and 11.6% for females, a significant difference (p less than 0.05). Survival is analyzed in terms of sex, site, size and histological grade. Patients (males and females) with the best 5-yr survival rates had tumors no more than 5.0 cm in length (11.9%) or confined to the cervical esophagus (18.9%). Histological grade appeared to have no influence on prognosis. The principal morbidity associated with radical radiotherapy is fibrous stricture formation. This occurred in 43.7% of the patients but was usually effectively managed by bouginage. (Author abstract) (4 Refs)

11. RADIATION THERAPY FOR SMALL BOWEL CARCINOMA: REPORT OF THREE PATIENTS AND REVIEW OF THE LITERATURE.

Kopelson G, Gunderson LL
Dept. Radiation Oncology, Salem Hosp., 81 Highland Ave., Salem, MA, 01970
Int J Radiat Oncol Biol Phys; 8(6):1055-1057 1982

Results of the radiotherapeutic management of three patients with carcinoma of the small intestine are reported and the literature on seven previously reported patients is reviewed. All 10 patients had adenocarcinoma. Local disease status after irradiation was assessed in only two patients and local in-field failure occurred in each after 4,500 and 4,000 rad. The major role of irradiation appeared to be that of postoperative treatment to those patients who have a high risk for failing. (10 Refs)

12. RESULTS OF SURGICAL AND COMPLEX TREATMENT OF COLONIC AND RECTAL CARCINOMAS.

Seifert W, Marx G
Zentralinstitut fur Krebsforschung, AdW der DDR, Lindenberger Weg 80, DDR-1115 Berlin-Buch, E. Germany
Arch Geschwulstforsch; 52(6):489-498 1982

Survival rates (SR) were analyzed among 961 patients who underwent treatment of rectal cancers (RC) or colon cancers (CC). Stage-dependent 5-yr SR for RC and CC were in general approx equal. The 5-yr SR for Duke Stage C RC treated by curative or palliative surgery was lower than that for equivalent CC. Prognosis depended on the rate of local recurrence of tumor (10.1% for CC and 30.7% for RC) after curative surgery. In long-term follow-up, the frequency of distant metastases was approx equal for RC and CC. The 5-yr SR for CC after curative surgery was increased from 43% to 74% by adjuvant chemotherapy with 5-fluorouracil (5-FU). 5-FU was administered intraluminally (30 mg/kg body wt) during surgery and iv postoperatively (100 mg/kg in single doses of 1,000 mg/day). The 5-yr SR for RC following curative surgery was increased from 53% to 80%+ by preoperative radiotherapy (20 Gray). This effect was confirmed by analysis of 10-yr SR, which also indicated that other variations in therapy were less effective. The disease-free interval for CC and RC was not significantly increased by postoperative treatment with lomustine (initial dosage 100 mg/square meter) and ftorafur-capsules (20 mg/kg body wt/day for 14 days). Data indicate that radiotherapy should be administered in high-risk cases to prevent local recurrence of RC, and that distant metastases of RC or CC can be prevented by adjuvant therapy with lomustine + ftorafur or lomustine in Duke Stages B and C. (24 Refs) (In GER)

13. THE ROLE OF PRE-OPERATIVE ADJUVANT THERAPY IN THE MANAGEMENT OF BORDERLINE OPERABILITY RECTAL CANCER.

Wassif SB
Rotterdamsch Radio-Therapeutisch Instituut (RRTI), Groene Hilledijk 301, 3075 EA Rotterdam, The Netherlands
Clin Radiol; 33(3):353-358 1982

One hundred and forty-three patients with potentially operable primary rectal cancer (of stage T2, T3 and T4), were allocated to one of three regimens of therapy, ie surgery only (S), preoperative radiotherapy followed by surgery (R), or preoperative radiotherapy combined with daily intravenous fluorouracil during the first 4 days of irradiation followed by surgery (C). The adjuvant therapy was well tolerated. It had no adverse effects on surgical procedures or morbidity. There was improvement in the resectability rate C greater than R greater than S, and reduction in the incidence of Duke's C category in the surgical specimens C less than R less than S. Five-yr follow-up analysis showed marked differences in the local control rates, and a reduced incidence of liver metastases in Group C. There was no significant difference in survival overall between the three treatment groups, but when patients with T3 and T4 tumors were analyzed separately there was a statistically significant improved 5-yr survival in Group C (p less than 0.01) when compared to Group S, while Group R gave a marginally significant result when compared to Group S (p = 0.05). (Author abstract) (9 Refs)

14. PROPOSALS FOR A PROTOCOL FOR THE TREATMENT OF ANAL CARCINOMA.

D'Errico G, Coucourde F, Gallipoli A
Istituto Nazionale per la Prevenzione, lo Studio e la Cura dei, Tumori Fondazione Senatore Pascale, Napoli, Italy
Minerva Chir; 37(8):729-731 1982

Fifty-seven patients (32 women, 25 men) with anal carcinoma were examined. Thirty of these patients, examined for the first time, are discussed with respect to various treatment plans. Seven patients were treated only with radiotherapy, 4 patients underwent local surgical excision followed by radiotherapy, 15 patients were treated using Miles amputation, and 4 women underwent a posterior pelvioectomy. Of the seven patients treated only with radiotherapy two (28%) remained free from relapse for 5 years following the intervention. (10 Refs) (In ITA)

15. EPIDERMOID CARCINOMA OF THE ANUS WITH SECONDARY LUETIC INFECTION.

Schuman ES, Sullivan ES, Kimbrough RC
2228 N.W. Pettygrove St., Portland, OR, 97210
Am J Proctol Gastroenterol Colon Rectal; 33(7):6-7,20 1982

This patient is presented for two reasons. First, the unusual association of a perianal cancer with syphilis infection within the cancer. Second, for the successful application of radiation therapy. Numerous reports in the past have presented patients with genital syphilis associated with cancers in other portions of the body. What is unusual in this case is the simultaneous cancer and luetic infection occurring in the same location. The Darkfield examination is a relatively easy test to perform and is recommended in patients with perianal lesions who are sexually active. The present day application of high-dose super voltage radiation has more efficacy in this lesion than did the low-dose orthovoltage treatments of yr past. Most reports which have been unfavorable for irradiation have used the latter treatment. The use of this radiation therapy as a preoperative regimen can significantly decrease the extent of resection required in many cases and occasionally, as in this case, can be curative. It may be that radiation therapy alone or in a multimodality regimen is optimum for epidermoid carcinomas of the perianal region and further investigation of this is warranted. (Author abstract) (15 Refs)

GYNECOLOGIC NEOPLASMS

16. POSTOPERATIVE RADIOTHERAPY OF EPITHELIAL OVARIAN CARCINOMAS.

Kogelnik HD, Szepesi T
Universitatsklinik fur Strahlentherapie und Strahlenbiologie, Alser Strasse 4, A-1090 Wien, Austria
Gynaekol Rundsch; 22(2):88-95 1982

The role of postoperative radiotherapy of epithelial carcinomas of the ovary is critically evaluated on the basis of recent findings in the international literature. Many prognostic factors must be considered in evaluation of the results of treatment of ovarian carcinomas, in order to make meaningful comparisons of results. Among these factors are the size of the postoperative residual tumor, histology (cell type, differentiation grade I-III), age, tumor stage (diagnosis, surgical technique, and completeness of the operation), as well as the adequacy of treatment. After the aforementioned are considered, adequate abdominopelvic irradiation using the 'moving strip' technique (in a craniocaudal direction) should be the treatment of choice for Stage I, II, and III tumors after complete resection or with residual tumor of less than 2 cm diameter. Exceptions to this rule are Stages IC and IIC with extensive ascites (administer chemotherapy first) and Stage IA, histologically well-differentiated and without rupture of the capsule (radical surgery alone is sufficient). The prerequisite for improvement in hitherto stagnant therapeutic results is intensive interdisciplinary cooperation. (21 Refs) (In GER)

17. STEREO X RAY PHOTOGRAMMETRY APPLIED FOR PREVENTION OF SIGMOID-COLON DAMAGE CAUSED BY RADIATION FROM INTRAUTERINE SOURCES.

Kuipers T
Dept. Radiotherapy, Rotterdamsch Radio-Therapeutisch Instituut, Groene Hilledijk 301, 3075 EA Rotterdam, The Netherlands
Int J Radiat Oncol Biol Phys; 8(6):1011-1017 1982

Details of the application technique and stereo x-ray photogrammetry (SRM) used to prevent severe sigmoid-colon radiation lesions in the radiation therapy of carcinoma of the uterine cervix are presented. Most late complications at the sigmoid-colon and also at the gut appear 1-2 yr following treatment. Follow-up data of all cervix carcinoma patients treated with intrauterine applications between 1973-1976 were reviewed. None of the patients required surgical intervention for radiation damage. The rate of local failures was studied in patients with Stage I, II, or III carcinoma of the cervix. The local failure did not significantly increase when, according to SRM dosimetry, the treatment was modified to prevent radiation damage. When readings from LiF probes inserted into the recto-sigmoid bowel were compared with direct readings (gamma-meter) and with results of SRM measurements at the barium filled sigmoid-colon, large discrepancies were observed. Observed differences could have been caused by the fact that the thermoluminescence method has been applied as an integrating measurement lasting 3 hr and the position of the probe may be changed during that time; whereas the SRM measurement only refers to the moment at which the films have been exposed. Experience with greater than 200 insertions with LiF elements indicated that rectal probes are not suitable for routine sigmoid-colon dosimetry. (9 Refs)

18. RESULTS OF RADIATION THERAPY FOR VULVAR CARCINOMA.

Pirtoli L, Rottoli ML
Policlinico Careggi, Istituto di Radiologia, viale Morgagni, I-50134 Firenze, Italy
Acta Radiol Oncol Radiat Phys Biol; 21(1):45-48 1982

Radical radiation therapy was given to 19 patients with vulvar squamous cell carcinoma, and as a palliative to 17. Complete regression of the tumor was achieved in 17 patients (47%). The 5-yr survival rate was 8/31 patients (26%) in the overall series and 8/19 patients (42%) in the radically irradiated group. (Author abstract) (12 Refs)

HEAD AND NECK NEOPLASMS

19. MEGAVOLTAGE ELECTRON BEAM THERAPY IN THE TREATMENT OF BASAL AND SQUAMOUS CELL CARCINOMATA OF THE PINNA.

Hunter RD, Pereira DT, Pointon RC
Christie Hosp. and Holt Radium Inst., Manchester, England
Clin Radiol; 33(3):341-345 1982

Kilovoltage x-ray therapy has considerable limitations when trying to obtain good functional results in patients with skin carcinomas arising on the pinna. Megavoltage electron beams with their better quality of radiation and homogeneous dose distribution have been recognized to have theoretical advantages. Forty-three patients with basal and squamous cell carcinomata arising on the pinna were treated radically using a 10 MeV electron beam. The technique and dosage are described and discussed. Primary cancer control with retention of the pinna was achieved in 34 patients. Salvage pinnectomy was performed in four patients for recurrence and one patient for radiation necrosis. Two patients with large primary tumors failed to resolve and died of their disease. The advantages for the patient of the policy of primary radical electron mean therapy are discussed. (Author abstract) (7 Refs)

20. OSTEOSARCOMA OF THE JAW: AN ANALYTICAL STUDY OF 13 CASES.

Okuyama T, Horiuchi J, Shibuya H, Suzuki S, Takeda M
Dept. Radiology, Tokyo Medical and Dental Univ. Sch. Dentistry, Tokyo, Japan
Nippon Igaku Hoshasen Gakkai Zasshi; 42(3):281-287 1982

Clinical features and roentgenological findings of 13 patients (7 men, 6 women; 23-59 yr old) with osteosarcoma of the jaw are reported and contrasted with those of other types of osteosarcoma. The tumors were located in the mandible in 11 and maxilla in 2. Compared to patients with other types of osteosarcoma, the patients with osteosarcoma of the jaw were slightly older (av 35.8 yr old) and there was not a predominance of male patients in this series. Initial symptoms of the osteosarcoma included painless swelling or masses in the gums, lip numbness, and odontalgia. Lymph node metastasis was observed in 2/13 patients and lung metastasis was observed in 4/13. Roentgenography showed sclerotic type patterns in three cases, lytic type in six, and mixed type in four. Histologically, seven cases were osteoblastic type osteosarcoma, two were chondroblastic type, and four were fibroblastic type. Treatment consisted of surgery alone in four cases and surgery and radiotherapy in nine. The 1-, 2-, and 10-yr survival rates were 100%, 69%, and 44%, respectively. Localized wide-area resection of the tumor is the treatment of choice, but in situations where this is not possible, localized control using radiotherapy is adequate. (14 Refs) (In JPN)

21. PERSPECTIVES OF HYPERTHERMIA IN THE TREATMENT OF TUMORS OF THE MAXILLOFACIAL AREA.

Dutreix J, Cosset MJ, Brule JM, Salama M, Damia E
Institut Gustave-Roussy, rue Camille-Desmoulins, F 94800 Villejuif, France
Rev Stomatol Chir Maxillofac; 83(2/3):124-128 1982

Encouraging results were obtained in the treatment of patients with malignant maxillofacial tumors by interstitial or intracavitary hyperthermia used alone or in combination with radiotherapy. Disappearance of tumors in 2-4 wk was observed in 4/6 patients in whom temperatures of 43-45 C were reached by infrared radiation. Diathermy at 27 megahertz, producing a temperature of 39.5 C, was ineffective in three other patients. Hyperthermia induced by high-frequency local currents (0.5-1 megahertz) was partially effective in 6/6 patients. (7 Refs) (In FRE)

22. COMPARISON OF PRE- AND POSTOPERATIVE RADIATION IN THE COMBINED TREATMENT OF CARCINOMA OF MAXILLARY SINUS.

Hu YH, Tu GY, Qi YQ, Xu GS, Wu XL, Cai WM, Qin DX, Yan JH, Gu XZ
Cancer Inst. (Hosp.), Chinese Acad. Medical Sciences, Beijing, People's Republic of China
Int J Radiat Oncol Biol Phys; 8(6):1045-1049 1982

Respective 5-yr survival rates were compared in 50 patients (35 males, 15 females, 30-64 yr old, median age 30-39 yr) with cancer of the maxillary sinus. Two groups were identified: pre-group, treated with preoperative irradiation and post-group, treated with postoperative irradiation. In the pre-group, 23/26 patients (64%) survived for greater than 5 yr. In the post-group, 4/14 (29%) patients were alive after 5 yr. Surgical complications occurred in 29% of the pre-group and in 14% of the post-group. Preoperative radiation is recommended because of the more favorable survival rates. (10 Refs)

23. TREATMENT OF NASOPHARYNGEAL CARCINOMA.

Lynn TC, Huang SC, Tu SM
Dept. Otolaryngology, Taiwan Univ. Hosp., Taipei, Taiwan 100, Republic of China
Excerpta Med Int Congr Ser; 571:408-417 1982

Recent increases in understanding of nasopharyngeal cancer (NPC), and in its diagnosis and treatment by radio- and chemotherapy are discussed. In Study I (1958-1973), 1,605 patients in all four stages of disease, were treated with conventional fractionated Co60 radiation. In Study II involving 1,032 patients in all stages of disease, split-dose radiotherapy (RT) was applied for 4 yr and combined chemotherapy with Endoxan (EN) was used in the last year. The 5-yr actuarial survival rate was 43.5% in Study I and 56.0 in Study II. Survival rates in later stages of disease were poorer because of the increased incidence of local recurrence and distant metastases. Postmortem study of 40 patients who died of NPC showed a high incidence of metastases in liver, lung and bone. Because of the high incidence of distant metastases in NPC, systemic treatment with chemo- and immunotherapy are needed to improve results. For chemotherapy after RT, the modern practice is to use a combination of agents in an intermittent manner: bleomycin, oncovin, methotrexate and EN (BOME schedule). Treatment of 44 patients with recurrence and/or metastases, treated with the BOME schedule between 1977 through 1980, led to improved survival rates compared to 81 patients with recurrence who refused chemotherapy. (32 Refs)

24. RESULTS OF LOW DOSE TELECOBALT IRRADIATION IN CANCERS OF THE OROPHARYNX AND ORAL CAVITY.

Popot B, Pierquin B, Calitchi B, Mazeron J, LeBourgeois J
Service de Radiotherapie, Hopital Henri Mondor, F 94010 Creteil, France
Ann Otolaryngol Chir Cervicofac; 99(3):147-149 1982

A comparative study of conventional fractionated irradiation (CFI) and low dose irradiation (LDI) is presented. CFI was used therapeutically on 30 patients (29 men and 1 woman) with oropharyngeal tumors (25), tumors of the oral cavity (4), and squamous cell carcinomas in multiple locations (1). LDI was used on 28 patients (22 men and 6 women) with similar tumors. Mucosal and skin tolerance were satisfactory with LDI, and 1 yr survival rates were comparable to those with CFI. The best response was obtained with 1.5 Gray/hr. (no Refs) (In FRE)

25. SUPPRESSOR CELL ACTIVITY IN PERIPHERAL BLOOD OF PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE TONSIL.

Mang W, Hammer C, Landauer I, Gruber F
Ear, Nose, Throat Clinics, Ludwig-Maximillians-Universitat, Munich, W. Germany
Excerpta Med Int Congr Ser; 582:249-253 1982

The suppressive activity of mononuclear cells in 62 patients with squamous cell carcinoma of the tonsil was investigated. Patients were treated with surgery plus irradiation, irradiation alone, or irradiation plus chemotherapy. Two tests were used as indicator systems: the phytohemagglutinin stimulated culture, and the one-way mixed lymphocyte reaction. Suppressor activity (SA) of peripheral blood lymphocytes of healthy controls was approx 20%. SA was similar in patients treated by surgery prior to surgery and increased after surgery. Similar findings were reported after irradiation. However, after chemotherapy, SA fell from approx 40% to approx 10%, reflecting the immunosuppressive activity of the chemotherapy. Total SA of activated and spontaneous suppressor cells fluctuated around normal values. SA was low in patients showing no signs of disease and high in patients with growing tumors. SA was high in patients with inoperable disease, decreased and fluctuated over the next 12 mo, then reached a max at 14 mo. SA in lymph nodes was always higher than that in peripheral blood. Lymph node lymphocytes showed a marked increase in SA when tested in allogenic blast formation, suggesting a direct effect of the tumor on suppressor cell population. No correlation of SA with tumor stage could be found. (no Refs)

26. SURVIVAL RATES IN ADVANCED LARYNGEAL CARCINOMAS AFTER POSTOPERATIVE IRRADIATION. THE SANDWICH TECHNIQUE.

Ganzer U, Meyer-Breiting E, Vosteen KH
Dept. Ear, Nose, and Throat, Univ. Dusseldorf, Moorenstrasse 5, 4000 Dusseldorf, W. Germany
Excerpta Med Int Congr Ser; 582:55-59 1982

Survival of 379 patients with laryngeal or pharyngeal cancer with the sandwich technique [ST: preirradiation with 30 Gray (Gy), laryngectomy, then postirradiation with 30 Gy] or laryngectomy followed by irradiation (60 Gy) was compared. Sixty-one patients were treated with the ST. Patients were followed for a minimum of 5 yr. Five- and 10-yr survival rates, respectively, were as follows: for supraglottic carcinoma tumor (T)3-4, NO-3, 68% and 60% with the ST and 63% and 53% with postoperative irradiation; for glottic carcinoma T3-4 No-3, 58% and 56% with the ST and 57% and 51% with postoperative irradiation; and for internal laryngeal carcinomas T3-4 NO-3, including the subglottic space, 61% and 55% with the ST and 61% and 54% with postoperative irradiation. Combined irradiation and surgery gave better results than either modality alone in advanced laryngeal carcinoma. In supraglottic carcinoma, the ST gave better results than postoperative irradiation, although the difference was small. The prognosis is worse in patients with preoperatively palpable cervical lymph nodes. (no Refs)

27. TREATMENT AND RESULTS IN A LARYNX CANCER MATERIAL (1945-1980) WITH SPECIAL REFERENCE TO GLOTTIC T1-T2 LESIONS.

Granstrom M, Hagland S, Lundquist PG
Dept. Oto-Rhino-Laryngology, Karolinska Sjukhuset, Box 60 500, S-104 01 Stockholm, Sweden
Excerpta Med Int Congr Ser; 582:61-64 1982

Treatment and results of 362 patients with laryngeal cancer is reported. Five cancers were subglottic, 52 supraglottic, and 305 glottic. Of the glottic cancers, 198 were tumor (T)1, 97 T2, 56 T3, and 11 T4. Treatment was with irradiation [64 Gray (Gy)] for T1 lesions, irradiation including neck nodes (64 Gy) for T2 lesions, peroperative irradiation (40 Gy) plus laryngectomy for T3 lesions, and preoperative irradiation (40 Gy) plus laryngectomy plus neck dissection for T4 lesions. T1-2 Node 1 lesions were treated with preoperative irradiation (40 Gy) plus laryngectomy plus neck dissection. Recurrences of glottic carcinoma T1 and T2 involved laryngectomy (38 cases), cordectomy (9), hemilaryngectomy (12) and miscellaneous (3). Of the 12 recurrences treated with hemilaryngectomy, 8 patients were alive with no evidence of disease, 1 was alive without tumor although laryngectomy had been performed, and 2 had died of lung cancer with no laryngeal recurrences at 3-5 yr follow-up. The 5-yr survival rate in patients with T1 or T2 recurrences was 91% and for T3-T4 recurrences, 52%. Only three tumors that could have been induced by radiotherapy were found; other etiology was possible. (no Refs)

28. THE MANAGEMENT OF GLOTTIC T3 CARCINOMA.

Stell PM, Dalby JE, Singh SD, Ramadan MF, Bainton R
Dept. Otorhinolaryngology, Univ. Liverpool, Liverpool, England
Clin Otolaryngol; 7(3):175-180 1982

Glottic stage T3 carcinoma can be treated by primary radical surgery, primary radical radiotherapy, radical surgery with preoperative irradiation, or partial surgery. Results of treatment of 89 patients with T3 glottic tumors demonstrated that good results can be achieved with radiotherapy if no palpable lymph nodes are found in the neck. A lesion confined to one vocal cord is a different disease from that in which the supra and/or subglottic compartments are involved. Surgery afforded worse results than radiotherapy, probably because surgery was used only for patients with large tumors. (24 Refs)

29. GLOTTIC CARCINOMA LIMITED TO THE VOCAL CORDS.

Van Den Bogaert W, Ostyn F, Van Der Schueren E
Div. Oncology, Radiotherapy Dept., Academic Hosp. St. Rafael, B-3000 Leuven, Belgium
Acta Radiol Oncol Radiat Phys Biol; 21(1):33-37 1982

Radiation therapy is generally considered to be the best primary treatment for early glottic carcinoma, with surgery reserved for local failure. In a series of 150 cases of T1 glottic carcinoma 138 were given radiation alone. In these patients the survival was 88% at 3 yr and 77% at 5 yr. Local control remained unchanged at 82% after 6 yr. When the results of surgery are included, local control was raised to 93%. Preservation of the larynx was obtained in 92% of survivors. Local extension or radiation dose levels had no influence on local control. The optimum dose could be lower than generally recommended. Voice quality after radiation therapy is superior to postsurgical laryngeal function. Since survival rates are identical, radiation therapy alone is the treatment of choice in all early glottic carcinomas. (Author abstract) (39 Refs)

30. FUNCTIONAL RESULTS AFTER PRIMARY RADIATION THERAPY OF VOCAL CORD CANCER (II. REPORT).

Furst H, Seidner W, Mau S
Regierungskrankenhaus, Scharnhorststr. 37, DDR-1040 Berlin, E. Germany
Radiobiol Radiother (Berl); 23(2):123-126 1982

Twenty-six from a series of 297 patients (av age 65.8 yr) undergoing primary radiotherapy for carcinoma of the vocal cords were evaluated for vocal cord function 6-13 yr after treatment. Patients were chosen on the basis of T1-and T2N0M0 tumors, condition after radiotherapy alone, and freedom from recurrence of tumor. Twelve patients had had Stage T1a tumors, 1 Stage T1b, and 13 Stage T2. Twenty-four patients had undergone telecobalt therapy (tumor dose 70 Gray in individual doses of 2 Gray, 5x/wk alternately from contralateral laryngeal fields). Eighteen patients had a pause in therapy afte 40 Gray; the pause lasted 2 wk for 3 patients and 4 wk for 15 patients. Two patients were treated with rapid electrons (same dosage as telecobalt therapy); one of these had a pause after 40 Gray. Evaluation included history, auditory voice states, laryngoscopic appearance, and microstroboscopic findings. Vocal disturbance was Grade 0 for five patients, 0-I for two, I for seven, II for seven, II-III for one, and III for four. Tiredness was noted by 25% of patients after prolonged or loud speech. Voice pitch was too low in two women and five men and too high in three men. Voice quality was generally better for patients with T1 tumors than for those with T2 tumors. Twelve patient showed no limitation or only moderate unilateral limitation of vocal cord mobility during phonation. Overall results were better than those achieved in 20 patients who underwent cordectomy and subsequent reconstruction of the vocal cords. (11 Refs) (In GER)

31. MANAGEMENT OF POST-CRICOID CARCINOMA.

Stell PM, Ramadan MF, Dalby JE, Hibbert J, Raab GM, Singh SD
Dept. Otorhinolaryngology, Univ. Liverpool, Liverpool, England
Clin Otolaryngol; 7(3):145-152 1982

Results of radiotherapy (RT) and surgery in 141 patients (36 men, 105 women; most were 40-70 yr old) with histologically proven post-cricoid carcinoma are presented. Forty-one patients were not treated; half died within 9 wk of presentation and survival beyond 1 yr was rare. Primary RT of 23 patients resulted in 5-yr survival of 38%. Approx 25% of the 39 patients treated with RT survived 5 yr. Surgery was by excision followed by flap repair (39 patients) or visceral repair (29). Flap repair resulted in only one hospital death, fewer life-threatening complications, a longer hospital stay (av 12 wk due to the two-stage procedure and the high rate of fistulas), and approx 35% survival at 150 wk. Visceral transposition resulted in higher hospital mortality (8/23 undergoing the primary procedure and 5/6 undergoing the salvage procedure), more life-threatening complications (visceral necrosis, cardiovascular collapse, renal failure, pulmonary embolism, mediastinitis, leakage of abdominal anastomoses), a shorter hospital stay (av 6 wk), and approx 10% survival at 150 wk. Patients without lymph node involvement survived longer than those with involved nodes. Small tumors with no clinical evidence of cervical lymph node involvement should be treated with RT. Only a few patients with unilateral metastases can be cured, and survival greater than 2 yr is not expected for patients with bilateral or fixed metastases. (55 Refs)

32. OPTIONAL FRACTIONATION SCHEDULES BASED ON STAGE IN TREATMENT OF DIFFERENTIATED SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.

Sugawara T, Tanaka O, Iguchi H, Aihara T
Dept. Radiology, Jichi Medical Sch., Tochigi Prefecture, Japan
Nippon Igaku Hoshasen Gakkai Zasshi; 42(3):271-280 1982

Results of external beam radiotherapy of 80 patients with differentiated squamous cell cancer of the larynx (60 patients), hypopharynx (5), oropharynx (8), oral cavity and lip (2), and external auditory canal (5) were analyzed. According to Stage, 32 patients had Stage T1 tumors, 26 Stage T2, 10 Stage T3, and 12 Stage T4. Radiotherapy was administered alone to 48 patients and radiotherapy was administered after or during laryngomicrosurgery in 32 patients with T1 or T2 glottic cancer (T1ms patients). Fractionation schedules were either 200 rad/day, 5x/wk (Category A; 23 patients), 250 rad/day, 5x/wk (Category B; 24 patients), or 300 rad/2 day, 3x/wk (Category C; 33 patients). Recurrence rates of Category A and B patients in the T1ms subgroup were lower than that for Category C patients. The recurrence rate of Category A patients with Stage T3 or T4 (T3+4) tumors were significantly lower than that of Category B patients. No significant differences in recurrence rate were observed according to Category among the patients with Stage T1 or T2 tumors. Effective radiation dose schedules for the T1ms patients and the Stage T3+4 patients, respectively, consisted of greater than 196 rad/day-dose fractions of radiation administered over a period of up to 42 days and less than 153 rad/day-dose fractions of radiation administered over a period of greater than 60 days. (25 Refs) (In JPN)

33. RADIOTHERAPY OF LYMPH NODE METASTASES IN PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK REGION.

Bartelink H, Breur K, Hart G
Netherlands Cancer Inst., Plesmanlaan 121, Amsterdam, The Netherlands
Int J Radiat Oncol Biol Phys; 8(6):983-989 1982

In order to obtain guidelines for radiation treatment, prognostic parameters were studied retrospectively in 233 patients (male:female ratio 5:1, median age 65 yr) who received radiation therapy for neck node metastases. The primary tumor of all patients was squamous cell carcinoma of the head and neck. The most frequent sites of the primary tumor were the oropharynx, larynx (mostly supraglottic) and oral cavity. Ninety percent of the 57 recurrences of the neck node metastases occurred during the first yr after irradiation; none occurred in the formerly irradiated area more than 2 yr after irradiation. Severe complications were observed in 16/233 patients (7%); the most important was dysphagia seen in 10 patients, one of whom died of sepsis following malignant cachexia. Of the 157 patients who were electively irradiated on the contralateral neck, 11 patients developed a neck node metastasis on that side during the follow-up period and most (7/11) also had a recurrence of the primary tumor or the homolateral neck node metastases. In 7/31 patients who received a dosage less than 1,100 R, an outgrowth of neck node metastases was observed. The actuarial survival rates at 3 and 5 yr were 25 and 21%, respectively. Prognostic factors related to the survival rate were: Tumor-stage, Nodal-stage, radiation dose, and residual disease 6 wk after irradiation period. (41 Refs)

34. INTRA-ARTERIAL INFUSION CHEMOTHERAPY WITH METHOTREXATE AND ADRIAMYCIN AND RADIOTHERAPY IN PATIENTS WITH CANCER OF THE HEAD AND NECK.

Turriziani A, Trodella L, Ausili Cefaro G, Montemaggi P, Caracciolo F
Dept. Oncological Radiotherapy, U.C.S.C., Rome, Italy
Excerpta Med Int Congr Ser; 575:139-144 1982

The possibility of improving the rate of local response was tested in 37 patients (male:female ratio 75%:25%, av female age 36 yr, av male age 59 yr) with advanced head and neck tumors by adding infusion chemotherapy (methotrexate, MTX; adriamycin, ADM) to the radiotherapeutic regimen. Thirty-three patients had squamous cell carcinoma, 2 cylindroma, and 2 mucoepidermoid adenocarcinoma. Four out of 17 tumors of the tongue were located in the mobile portion, and 13 in the root. MTX, 5 mg/day, was used a single agent in 26 patients, and combined sequentially with 10 mg/day ADM. Each drug was diluted in 500 ml saline and 5,000 units of heparin were added. Infusions lasted for 24 hr/day, av 15 days. The dose of the interstitial radiotherapy was 60-65 Gray units (Gy) to the tumor. External radiotherapy reached a dose of 80 Gy. Patient status was evaluated at the end of chemotherapy and after completion of radiotherapy. After chemotherapy 3 patients (8.3%) failed to respond, 9 (24.9%) had less than 50% reduction in tumor size, 23 (62.1%) greater than 50% response, and 2 (5.4%) a complete clinical remission (100% response). Response to radiotherapy was complete in 17 patients (46.2%), greater than 50% in 11 (29.4%), and less than 50% in 6 (16.2%). Three patients (8.3%) failed to respond. Analysis of survival according to stage revealed that 6/9 patients with Stage II disease lived and were free of disease after an av of 21 mo (range 7-48 mo), while three died after a mean survival of 8 mo. Survival was analyzed according to the presence of the lymph node involvement. All 15 patients with cervical lymph node metastases experienced persistent or recurrent disease, and 14 died after a mean survival of 17 mo. (6 Refs)

35. INDOMETHACIN SENSITIVE SUPPRESSOR CELL ACTIVITY IN HEAD AND NECK CANCER PATIENTS PRE- AND POSTIRRADIATION THERAPY.

Maca RD, Panje WR
(c/o Panje) Dept. Otolaryngology and Maxillofacial Surgery, Univ. Iowa Hosp., Iowa City, IA, 52242
Cancer; 50(3):483-489 1982

The effects of the addition of indomethacin to PHA or Con A stimulated lymphocytes from patients with untreated squamous cell carcinoma of the head and neck or from patients with the disease who have just finished irradiation therapy from the disease was quantitated and compared to those of the control group. Lymphocytes from 8 of 26 patients with untreated carcinoma were significantly augmented by the addition of indomethacin. The remaining 18 patients were equal to the controls. For all 17 patients who had just finished extensive field irradiation therapy, significant enhancement of PHA and Con A reactivity by indomethacin was found, which did not appear to be solely a function of low baseline mitogen reactivity. In additional studies, stimulated lymphocytes of irradiated patients were tested for their sensitivity to the inhibitory effect of PGE2. The mitogen treated lymphocytes from all patients that had just finished irradiation therapy were found to be significantly more sensitive to the inhibition by PGE2 as compared to the normal lymphocyte response. This effect was also found not to be related merely to a low PHA or Con A reactivity of the lymphocytes. In both patient groups there was a striking correlation between the percent augmentation of indomethacin and the percent inhibition of PGE2 in that when the percent augmentation values were low so were percent inhibition values and when the degree of augmentation by indomethacin was elevated so was the inhibition by PGE2. This data suggests that increased sensitivity of stimulated lymphocytes to PGE2 may be responsible, at least in part, for the depressed mitogen response and the significant augmentation of this immune response by indomethacin in about 1/3 of the untreated patients with advanced head and neck carcinoma and in those patients who have just finished irradiation therapy. The results of this study support the hypothesis that perhaps patients receiving irradiation therapy may benefit by the oral administration of indomethacin, an approach that needs further consideration. (Author abstract) (33 Refs)

HEMATOLOGIC, RETICULOENDOTHELIAL AND LYMPHATIC NEOPLASMS

36. TREATMENT OF GENERALIZED HODGKIN'S DISEASE IN CHILDREN.

Vialushkin BIa, Koshel' IV, Tsyplenkov VG
Inst. Pediatrics, Moscow, USSR
Pediatriia; (6):49-52 1982

Results of treatment of 81 children (3-15 yr old) who had generalized Hodgkin's disease (HD) are reported. Twenty-one of these patients were in Stage IIIA, and 60 were in Stage IIIB; 9 had lymphoid predominance, 11 had nodular sclerosis, 49 had mixed variant, and 12 had lymphoid depletion. Prior to chemotherapy, the patients were subjected to exploratory laparotomy with splenectomy, biopsy of enlarged lymph nodes, and marginal liver biopsy. Histological examination showed spleen involvement in greater than 70% of the patients. Induction therapy included administration of cyclophosphamide (600 mg/square meter, iv, days 1 and 8), vinblastine (15 mg/square/meter, iv, days 1 and 8), procarbazine (100 mg/square meter, po, daily), and prednisone (40 mg/square meter, po, daily). The patients received six 2-wk courses of the polychemotherapy with 10-14 days between the courses. Complete remission was achieved in greater than 95% of the patients. Maintenance therapy included distance gamma irradiation (3,500-4,500 rads to the primary focus and 3,200-4,000 rads to zones of regional metastatic spread). The 5-yr survival rate was 92.7%; 54.6% of the patients were free of recurrences. (no Refs) (In RUS)

37. EORTC (EUROPEAN ORGANIZATION FOR RESEARCH ON TREATMENT OF CANCER) STUDY OF HODGKIN'S DISEASE.

Somers R, Burgers JMV, Hartgrink-Groeneveld CA, Kazem I, Noordijk EM, Qasim MM, Sizoo W, Van Unnik JAM, Wagener DJTh
Antoni van Leeuwenhoek Ziekenhuis, Amsterdam, The Netherlands
Ned Tijdschr Geneeskd; 126(14):616-622 1982

The results of two clinical trials in patients with Hodgkin's disease Stage I and II are presented. The first trial during the period 1964-1971, ie, before the introduction of staging laparotomy and polychemotherapy, include 153 patients subjected to radiotherapy and 136 subjected to radiotherapy and to chemotherapy with vinblastine. The incidences of recurrence were 58% in the radiotherapy group and 37% in the combination therapy group (p less than 0.01), and the 5-yr symptom-free survival rates were significantly higher after combination therapy than after radiotherapy only, even though the difference in the overall 5-yr survival rates was not significant. Recurrences developed in the irradiated area in 11% of the patients subjected to radiotherapy only, and in 6% of those subjected to combination therapy. The survival rates were significantly higher (p less than 0.005) in the patients with favorable prognoses than in those with unfavorable prognoses. The second trial during the period 1971-1976 included 131 patients (Group I) subjected to radiotherapy only (mantle-field irradiation) and 125 (Group II) subjected to staging laparotomy with splenectomy, followed by mantle-field irradiation. Splen involvement was found in 37/125 laparotomized patients. The incidences of recurrences were 33% in Group I, 20% in the 88 patients without and 46% in those with spleen involvement in Group II. The symptom-free survival rate was found to be lowest for the patients with spleen involvement. Extended irradiation involving the upper abdomen had favorable effect on both the overall and symptom-free survival rates in the patients with favorable and unfavorable prognostic signs alike compared with the first trial. (10 Refs) (In DUT)

38. PATTERNS OF RELAPSE FOLLOWING RADIOTHERAPY FOR HODGKIN'S DISEASE.

Yarnold JR, Jelliffe AM, Hudson GV
(c/o Jelliffe) Dept. Radiotherapy and Oncology, Middlesex Hosp., London, England
Clin Radiol; 33(2):137-140 1982

A study of the relationship between bulk disease and sites of relapse has been undertaken in 95 patients treated by radiotherapy for early stage Hodgkin's disease. All patients were investigated and treated according to protocols of the British National Lymphoma Investigation. In a group of 80 pathologically staged patients the pattern of relapse in 39 patients confirms an association between recurrence and sites of bulk involvement in the mediastinum, neck and axilla. Bulk disease predisposes to recurrence by virtue of local failure inside the treatment vol as well as marginal recurrence. A small number of patients relapsed initially in sites that were irradiated prophylactically. (Author abstract) (8 Refs)

39. ALLOGENEIC MARROW TRANSPLANTATION FOR ACUTE NON-LYMPHOBLASTIC LEUKEMIA IN RELAPSE USING FRACTIONATED TOTAL BODY IRRADIATION.

Buckner CD, Clift RA, Thomas ED, Sanders JE, Stewart PS, Storb R, Sullivan KM, Hackman R
Fred Hutchinson Cancer Res. Center, 1124 Columbia St., Seattle, WA, 98104
Leuk Res; 6(3):389-394 1982

Twenty-three patients (10-52 yr old) with acute non-lymphoblastic leukemia in relapse were treated with cyclophosphamide (60 mg/kg on days-10 and-9), fractionated total body irradiation (200 rad/day on day-5 and day 0), and allogeneic marrow transplantation. One patient died of infection on day 17 without evidence of engraftment; all other patients achieved engraftment. Eight patients relapsed between 30 and 619 days after transplantation and died of leukemia-related problems. Six of the 23 patients (26%) were alive and free of disease 756-1,306 days following transplantation. Seven of the 22 patients with sustained engraftment developed significant acute graft-vs-host disease (GVHD, Grade 2 or greater). Eight of 15 patients surviving greater than 100 days developed chronic GVHD. Of 11 with sustained engraftment and no significant GVHD, none survived. Sixteen patients had cytogenetic studies of marrow prior to transplantation to detect leukemia-associated chromosomal abnormalities. In 2 patients such abnormalities could not be detected, and a variety of chromosomal rearrangements was present in the 14 other patients. All eight patients who relapsed after transplantation had leukemia-associated chromosomal markers before transplantation, and four of the patients had donors of opposite sex. After relapse, five patients were studied, and in all patients the recurrent leukemia cells were of host type. (23 Refs)

40. ALLOGENEIC MARROW TRANSPLANTATION USING FRACTIONATED TOTAL BODY IRRADIATION IN PATIENTS WITH ACUTE LYMPHOBLASTIC LEUKEMIA IN RELAPSE.

Clift RA, Buckner CD, Thomas ED, Sanders JE, Stewart PS, Sullivan KM, McGuffin R, Hersman J, Sale GE, Storb R
Fred Hutchinson Cancer Res. Center, 1124 Columbia St., Seattle, WA, 98104
Leuk Res; 6(3):401-407 1982

Results of treating 41 patients with acute lymphoblastic leukemia (ALL) in relapse with high dose cyclophosphamide (120 mg.kg) and fractionated total body irradiation (TBI) regimens (1,200-1,750 rad) followed by marrow transplantation from HLA-matched siblings are described. Six fractionated TBI regimens were evaluated. Forty of 41 patients had evidence of engraftment as determined by rising peripheral blood counts and histological examination of marrow. Ten patients died of non-leukemic causes between days 11 and 143 and had no evidence of residual or recurrent leukemia. Eighteen of 41 patients had radiographic evidence of pneumonitis. Clinically, 13/18 patients were thought to be interstitial, 4/18 alveolar, and 1/18 both alveolar and interstitial. Nine patients underwent open-lung biopsy. Ten of the 18 patients with pneumonitis died and the pneumonitis was the primary cause of death in 7 (1 histoplasmosis, 4 cytomegalovirus, 1 Pneumocystis, and 1 Candida). Ten patients died without evidence of leukemia, 9 during the first 66 days and 1 on day 143. One patient died on day 19 of infection but had persistent leukemia at autopsy. Of the 40 patients achieving sustained engraftment, 6 developed significant acute graft-vs-host disease (GVHD; Grade 2-4) and 7 developed chronic GVHD. Twenty-eight patients had neither significant acute or chronic GVHD, and 20/28 patients had leukemic relapse including 4 at extramedullary sites. Fourteen of the 27 patients who relapsed had donors of opposite sex; in 10/14 patients the chromosome marker on the leukemic cells was of host origin, and in 1/14 the origin could not be established. (27 Refs)

41. ALLOGENEIC MARROW TRANSPLANTATION FOR ACUTE LYMPHOBLASTIC LEUKEMIA IN REMISSION USING FRACTIONATED TOTAL BODY IRRADIATION.

Clift RA, Buckner CD, Thomas ED, Sanders JE, Stewart PS, McGuffin R, Hersman J, Sullivan KM, Sale GE, Storb R

Fred Hutchinson Cancer Res. Center, 1124 Columbia St., Seattle, WA, 98104

Leuk Res; 6(3):409-412 1982

Twelve patients (4-29 yr old) with acute lymphoblastic leukemia (ALL) in second to fourth remission were treated with cyclophosphamide (120 mg/kg), 1,400 rad of fractionated total body irradiation, then allogeneic marrow transplantation. All patients were given methotrexate (MTX) 15 mg/square meter (m2) on day 1, 10 mg/m2 on days 3, 6, and 11, and then weekly to day 102 to prevent graft-vs-host disease (GVHD). Alternate MTX doses were given as 12 mg intrathecally from days 32 to 102 to prevent CNS relapse. Two of five patients transplanted in second remission had the initial relapse after maintenance chemotherapy had been discontinued. All patients achieved engraftment. Two patients died on days 32 and 62 of interstitial pneumonitis associated with cytomegalovirus. Six patients relapsed between day 59 and 659, and 4/6 died of leukemia-related problems. Two patients who relapsed were alive, one in relapse, and one in remission following local irradiation for isolated testicular relapse. Four patients were alive and free of disease from 658-992 days following transplantation. Eight patients did not have significant (Grade 2 or greater acute and/or chronic) GVHD: two died on days 32 and 62 of interstitial pneumonitis, five relapsed (1 survived), and one was alive and disease-free 838 days after transplant. All four patients with significant acute or chronic GVHD were alive. Results suggested that 1,400 rad fractionated irradiation is not more effective than 1,000 rad delivered in a single exposure in patients transplanted for ALL in remission or relapse either in terms of survival or of frequency of relapse. (23 Refs)

42. TOTAL BODY IRRADIATION BEFORE BONE MARROW TRANSPLANTATION: A REVIEW.

Barrett A

Inst. Cancer Res., Royal Marsden Hosp., Downs Road, Sutton, Surrey, England

Clin Radiol; 33(2):131-135 1982

An increasing number of centers are undertaking BMT and many different techniques are being evolved for TBI. The critical factors to be considered are total dose and dose rate. Conventional single treatments of 1,000 cGy (rad) at low dose rates are effective and safe, but alternative fractionated regimes are being explored. As few groups treat enough patients to be able to conduct a randomized study, careful and standardized recording of technique and doses given will be important in determining optimum ways of delivering TBI. (Author abstract) (20 Refs)

MUSCULOSKELETAL NEOPLASMS

43. SOFT TISSUE SARCOMAS: THE ROLE OF RADIATION THERAPY.

Suit HD

Dept. Radiation Therapy, Harvard Medical Sch., Massachusetts General Hosp., Boston, MA

Hosp Pract; 17(7):114-120 1982

Treatment of soft tissue sarcomas with preoperative moderate dose irradiation and conservative surgery is reported. Location, origin, incidence, growth, symptoms, and clinical evaluation of patients with soft tissue sarcomas are reviewed. Biopsy is the only way to distinguish benign from malignant tumors. An inappropriate biopsy can preclude appropriate definitive treatment. Small lesions, thought to be benign cysts, lipomas, fibromas, or angiomas are removed by excisional biopsy. Larger lesions or those thought to be malignant should undergo incisional biopsy. Histopathologic grading and staging of soft tissue sarcomas is reviewed. Large tumors suspected of being malignant should receive 5,000-6,000 rad over 5-6 wk at a dose of 200 rad/day, 5 days/wk. The first 5,000 rad should include the tumor and its probable extensions into adjacent tissues; the last 500-1,000 rad should be given to the tumor alone. Conservative resection should be performed 2-3 wk later. A booster dose of 1,000-1,500 rad should be given to the tumor bed intraoperatively. Treatment of 52 patients with this method resulted in 6/42 patients with large tumors experiencing local recurrence and 20/52 with large tumors developing distant metastases. Local control was achieved in all patients with small tumors (less than 5 cm). Delayed wound healing occurred in 7/52 patients. (no Refs)

44. COMBINATION HYPERTHERMIA AND RADIATION THERAPY FOR MALIGNANT MELANOMA.

Kim JH, Hahn EW, Ahmed SA

Dept. Radiation Therapy, Memorial Sloan-Kettering Cancer Center, 1275 York Ave., New York, NY, 10021

Cancer; 50(3):478-482 1982

Since 1975, clinical studies have been carried out to determine whether radiation when combined with localized hyperthermia evokes improved tumor control compared to that achieved with radiation alone. Local tumor hyperthermia was achieved using radiofrequency inductive heating at 27.12 MHz. In bulky lesions (greater than 100 cm3), radiofrequency conductive heating at 13.56 MHz was also used. More than 100 lesions in 38 patients were treated with radiation alone and hyperthermia in combination with radiation. Most lesions were treated either twice a wk or once a wk, depending on radiation dose fractionation scheme used. The overall result of tumor control rate of the combined therapy is superior to radiation therapy alone (75% vs 46%; p less than 0.01). No enhanced normal tissue morbidity was seen following the combined therapy. The detailed analysis of the treatment results shows that the tumor control rate is dependent on dose per fraction, the total dose, and the initial tumor volume. The radiation alone, at high doses per fraction, was effective in controling 80% of the lesions, if the tumor volume was less than 10 cm3, compared to 30% when the tumor volumes were larger. The combination therapy, on the other hand, effected 80% local tumor control regardless of the tumor volume. The importance of good thermal distribution within the tumor volume, selective heating of the tumor tissues and the sequence and time interval between the combined therapy is discussed. (Author abstract) (20 Refs)

RESPIRATORY AND CARDIOVASCULAR NEOPLASMS

45. INTENSIVE COMBINED CHEMOTHERAPY AND RADIOTHERAPY OF SMALL-CELL BRONCHOGENIC CARCINOMA.

Perevodchikova NI

Allunionsforschungszentrum fur Onkologie, Akademie der Medizinischen Wissenschaften der UdSSR, Kaschirskoje Chaussee 6, 115478 Moskau, USSR

Arch Geschwulstforsch; 52(6):481-487 1982

The relative effectiveness of combined chemotherapy (CCT), with or without radiotherapy (RT), was studied in 117 patients with morphologically confirmed small-cell bronchogenic carcinoma (SCBC) in Stage III or IV. CCT and RT were administered to 82 patients. CCT alone was administered to 35 patients. CCT regimens consisted of cyclophosphamide (CTX: 500 mg/square meter [mg/m2] iv once in 3 wk), methotrexate (MTX: 10 mg/m2 po weekly), and N-nitroso-N-methyl urea (NMU: 400 mg iv in 2 wk) (Group 1); CTX, MTX, and dacarbazine (DTIC: 200 mg iv over 5 days in wk 1, 4, 7, and 10) (Group 2); or adriamycin (ADR: 50 mg/m2 iv over 3 wk), vincristine (VCR: 1 mg iv/wk), and DTIC (Group 3). RT consisted of 1,000 rad/wk, 5 days/wk in wk 4, 5, 6, 8, and 10. In Group 1 partial remission was achieved in 68-72% of patients and complete remission in 22%. The av survival time was 10.8+ mo overall and 24.2+ mo for those in complete remission. In Group 2 partial remission was achieved in 61% and complete remission in 29%. Av survival time was 7.9+ mo overall and 16.2 mo for those in complete remission. In Group 3 partial remission was achieved in 68% and complete remission in 32%. Av survival time was 8.9+ mo overall and 14.2+ mo for those in complete remission. Among 20 patients receiving only CCT, partial remission was achieved in 75% and complete remission in 25%. In a second group of 15 patients receiving CCT, partial remission was achieved in 80% and complete remission in 20%. Observation times for patients receiving only CCT were too short to evaluate long-term survival. (3 Refs) (In GER)

46. COMBINED RADIOTHERAPY AND CHEMOTHERAPY WITH CYCLOPHOSPHAMIDE, ADRIAMYCIN, METHOTREXATE, PROCARBAZINE (CAMP) IN 64 CONSECUTIVE PATIENTS WITH EPIDERMOID BRONCHOGENIC CARCINOMA, LIMITED DISEASE: A PROSPECTIVE STUDY.

Trovo MG, Tirelli U, De Paoli A, Franchin G, Roncadin M, Magri MD, Galligioni E, Veronesi A, Tumolo S, Carbone A, Grigoletto E

(c/o Grigoletto) Div. Radiotherapy and Medical Oncology, Ospedale Civile S. Maria degli Angeli, 33170 Pordenone, Italy

Int J Radiat Oncol Biol Phys; 8(6):1051-1054 1982

Sixty-four consecutive patients (56 males, 8 females, 39-78 yr old, median age 60.5 yr) with epidermoid bronchogenic carcinoma were treated with radiotherapy and chemotherapy (cyclophosphamide, adriamycin, methotrexate, and procarbazine; CAMP). The median number of CAMP cycles was 4.5. Four patients achieved complete remission, 36 partial remission, and 24 did not respond, for an overall response rate of 62%. Median survival for all patients was 12.7 mo. Sites of relapse are presented. Toxicity was acceptable and no therapy-related death occurred. (21 Refs)

47. A METHOD FOR SELECTIVE ENDOBRONCHIAL AND ENDOTRACHEAL IRRADIATION.

Boedker A, Hald A, Kristensen D
Olfert Fischersgade 46-II-3, DK-1311 Copenhagen, Denmark
J Thorac Cardiovasc Surg; 84(1):59-61 1982

A method for selective endobronchial and endotracheal irradiation is described. This method was used to treat a young woman with an unresectable adenoid cystic carcinoma of the trachea involving the main bronchi. The treatment provided good palliation, as indicated by increase of maximal breathing capacity (MBC) and forced expiratory volume in the first second (FEV 1.0). (Author abstract) (13 Refs)

INSTRUMENTATION AND TECHNOLOGY

48. ELECTROGAMMAGRAPHY: A POSSIBILITY TO CONTROL THE FIELD IN RADIATION THERAPY.

Mamontov V, Telycenas A, Atkocius V, Reichel G, Freitag J, Freitag G
Onkologisches Zentralinstitut, Gesundheitsministeriums der Litauisches SSR, Vilnius, USSR
Radiobiol Radiother (Berl); 23(2):113-118 1982

Electrogammagraphy (EGG) was tested as a method for controlling the field in radiotherapy. After tests using formalin-fixed head phantoms, EGG was performed on 59 patients with malignant tumors of the larynx, esophagus, lungs, urinary bladder, colon, or female genital organs. EGG was performed with several different apparatuses. A lead sheet was used between the object and a selenium plate to ensure reproducible exposure times and prevent overexposure of the selenium plate. Positive and negative methods of image development were used. In phantoms and patients boundaries between air and soft tissues and between soft tissues and bone were clearly delineated. EGG of the thorax showed air-filled cavities distinctly and allowed demonstration of a tumor blocking the bronchial lumen. In EGG of the pelvis, positive EGG was better for the depiction of bone and negative EGG was better for the depiction of soft tissues. Paper imaging facilitated planning of radiotherapy. Positive imaging required higher radiation doses than negative imaging. The quality of the image was limited at source-to-object distances less than 75 cm. EGG allowed more precise planning of radiation doses than did conventional methods. Doses of radiotherapy were thus more effective, and radiation exposure of normal tissues was minimized. (5 Refs) (In GER)

49. ANALYTICAL CALCULATION OF BORON-10 DOSAGE IN CELL NUCLEUS FOR NEUTRON CAPTURE THERAPY.

Kobayashi T, Kanda K
Res. Reactor Inst., Kyoto Univ., Kumatori-cho, Sennan-gun, Osaka, 590-04, Japan
Radiat Res; 91(1):77-94 1982

Analytical calculation was used to evaluate the following measures of physical effects in a spherical cell nucleus subjected to heavy particles caused by thermal neutron reactions in tissue: absorbed energy in the cell nucleus (AECN); the number of particles hitting and/or passing through a cell nucleus; the integrated particle track length in a cell nucleus; and absorbed energy distribution in tissue. The AECN was studied from the viewpoint of four types of relations: range vs cell nucleus radius; range vs linear energy transfer (LET); distance between cell nuclei vs range; and distance between cell nuclei vs LET. The boron selective dose ratio (BSDR) is defined, which relates AECN by heavy charged particles in tissue containing 10B to that in normal tissue. It was much influenced by the 10B distribution in the cell, and if the 10B distribution in the cell is known, can be a very useful scale indicating the selective therapeutic effect of neutron capture therapy. The BSDR, which includes both effects of 10B concentration and distribution, can in principle be calculated for cell components other than the nucleus, such as cell membrane, lysosome, or DNA. (15 Refs)

PRE-CLINICAL STUDIES

50. RADIOSENSITIVITY OF NALL HUMAN MELANOMA TRANSPLANTED INTO NUDE MICE: REPAIR, REOXYGENATION AND DOSE FRACTIONATION.

Guichard M, Malaise EP
Laboratoire de Radiobiologie Cellulaire, Institut de Radiobiologie Clinique, 9480 Villejuif, cedex S, France
Int J Radiat Oncol Biol Phys; 8(6):1005-1010 1982

The respective roles of repair and reoxygenation in the response to fractionated irradiation was studied in Nall human melanoma grafted in athymic mice. When two doses of 10 Gray units (Gy) each were administered to a tumor, separated by intervals ranging from 0-24 hr, a significant increase of the fraction of surviving cells was observed. The reoxygenation was determined by delivering two doses of 10 Gy, separated by intervals varying from 15 min-24 hr. The fraction of hypoxic cells was maximal within 1 hr after irradiation and then decreased slowly. After 24 hr, the fraction was only 54% of the initial value, the difference being significant. Tumors were irradiated in daily sessions with seven doses of 2.5 Gy each. A test dose of 17.5 Gy was delivered 24 hr after the last 2.5 Gy dose to tumors growing in air-breathing animals or in animals asphyxiated 10 min prior to the test dose. With fractionated irradiation, the hypoxic cell fraction remained extremely high. When tumors were removed 6 hr after the last irradiation, the fraction of surviving cells was not significantly different from that observed when the tumors were removed immediately after irradiation. Results indicated the importance of hypoxia as a factor in tumor radioresistance. (36 Refs)

51. CRITICAL COMMENTS ON THERMODOSIMETRY AND HYPOTHESES ON THE USE OF COMPUTED TOMOGRAPHY IN ONCOLOGIC ELECTROMAGNETIC HYPERTHERMIA.

Bistolfi F
Servizio di Radioterapia, Ospedali Galliera, 16128 Genoa, Italy
Minerva Med; 73(27):1891-1898 1982

The value of computerized axial tomography (TAC) in thermodosimetry of deep organs and tissues for oncological electromagnetic hyperthermia is discussed. In view to the difficulties encountered in thermodosimetry TAC is of great value in oncological thermodosimetry, because it demonstrates the geometry of tissues and body walls and adjacent tissues, as well as the water content in tissues. (17 Refs) (In ITA)

REVIEWS

52. EXPERIMENTAL RESULTS AND CLINICAL IMPLICATIONS OF THE FOUR R'S IN FRACTIONATED RADIOTHERAPY.

Trott KR

Strahlenbiolgisches Institut der Universitat Munchen, Ingolstadter Landstrasse 1, D-8042 Neuherberg, W. Germany

Radiat Environ Biophys; 20(3):159-170 1982

In relation to fractionated radiotherapy (RT), a review is presented of experimental and clinical data relative to the four R's: repair of sublethal damage, reoxygenation, redistribution of cells through the division cycle, and regeneration. The clinical importance of redistribution has not been proven experimentally. No unequivocal data on the value of reoxygenation in human cancer exists, while results in rodent tumors show much variability. Repair and regeneration are the most important of the four R's in fractionated RT. Experimental and clinical evidence is presented which suggests a differential response between tumor and late responding normal tissues in regard to these two R's. Tumors in general appear to have a smaller capacity for repairing sublethal radiation damage but a higher capacity for repopulation than late responding normal tissues. The differential responses of tumors and critical organs may permit the design of new fractionation schedules based on better data and may suggest, for certain tumor types, fractionation schedules which are markedly different from conventional schedules and which may permit a better chance of cure of cancer. (31 Refs)

53. EXPANDING OPTIONS IN RADIATION ONCOLOGY: NEUTRON BEAM THERAPY.

Cohen L

Neutron Therapy Facility, Fermilab, PO Box 500, Batavia, IL, 60510

J R Soc Med; 75(6):394-398 1982

Twelve years experience with neutron beam therapy in Britain, the USA, Europe and Japan shows that local control is achievable in late-stage epidermoid cancer somewhat more frequently than with conventional radiotherapy. Tumors reputed to be radioresistant (salivary gland, bladder, rectosigmoid, melanoma, bone and soft-tissue sarcomas) have proved to be particularly responsive to neutrons. Pilot studies in brain and pancreatic tumors suggest promising new approaches to management of cancer in these sites. The availability of neutron therapy in the clinical environment opens new prospects for irradiation of 'radioresistant' tumors, permits more conservative cancer surgery, expands the use of elective chemotherapy and provides a wider range of options for cancer patients. (Author abstract) (12 Refs)

54. CURRENT ROLE OF NITROIMIDAZOLE SENSITIZERS AND SULFHYDRYL PROTECTORS IN CLINICAL ONCOLOGY.

Coleman CN, Brown JM
Div. Radiation Therapy, Stanford Univ. Medical Center, Stanford, CA
Appl Radiol; 11(4):31-32,37-38,42-43 1982

The rationale for development of radio- and chemosensitizers and radioprotectors and current clinical applications of these compounds are discussed. The therapeutic effect of radiotherapy (RT) or chemotherapy (CT) generally increases with increasing doses of therapy. The maximum dose is limited by the toxic effects on normal tissues. With the use of these compounds, by increasing the sensitivity of tumor cells, protecting normal cells, or both, the effective dose of therapy can be increased. Misonidazole was the first 2-nitroimidazole to enter clinical trials as a tumor sensitizer. Doses of the drug are limited by neural toxicity, indicated primarily by sensory peripheral neuropathy. In Phase 2 trials the incidence of neuropathy was 27% and was related to total dose rather than the administration schedule. The maximum therapeutic dose of misonidazole is 10.5-12.0 g/square meter. Efforts to reduce toxicity are aimed at producing drugs that are less lipophilic and more hydrophilic. SR-2508 is currently being tested in animals. Desmethylmisonidazole is undergoing Phase 1 clinical trials. Sulfhydryl compounds protect normal tissues from the effects of ionizing radiation by scavenging free radicals created by the radiation. WR-2721 is being tested in Phase 1 trials. Animal studies indicate that this drug protects bone marrow, skin, salivary glands, and the gastrointestinal tract, but not the brain and spinal cord. WR-2721 is apparently also effective against the toxic effects of some CT agents. (37 Refs)

55. INTERACTION OF DRUGS AND RADIATION - PROMISE OR PITFALL?

Berry RJ
Dept. Oncology, Middlesex Hosp. Medical Sch., London, England
Clin Radiol; 33(2):121-129 1982

The interaction of radiation with drugs is reviewed with a brief history of radiotherapy in cancer treatment and cytotoxic chemotherapy and the kinds of interactions that can be expected. Spatial cooperation studies of the adjuvant role of cytotoxic chemotherapy have revealed that such treatment does not positively affect the patient's prognosis in most cancers. The addition of cytotoxic chemotherapy to surgery and radiotherapy for treatment of breast cancer did not affect the proportion of patients relapse-free at 5 yr, although an approx 2-yr delay in the appearance of recurrent disease was observed. In comparison, the addition of selective local treatment to the response obtained to multiple cytotoxic drugs increases the maintenance of tumor local control. In addition, patients treated with a combination of radiation and chemotherapy have, after long-term follow-up developed leukemia and/or other second malignancies. Cytotoxic drugs also affect normal tissues within the volume treated by radiotherapy. Some drugs may be independent in their toxicity, such as hypoxic cell sensitizers. With radioprotectors, any failure in drug penetration results in an intolerable drug over-dose to limiting normal tissues. Hypoxic cell sensitizers selectively improve tumor response to local treatment by radiotherapy, while at the same time they enhance damage to normal tissues. Current chemotherapeutic agents are insufficiently selective between tumor and host, except in special cases, such as leukemia, some lymphomas, and choriocarcinoma. (22 Refs)

AUTHOR INDEX WITH CITATION NUMBERS

Ahmed SA 44
Aihara T 32
Atkocius V 48
Ausili Cefaro G 34
Bainton R 28
Barrett A 42
Bartelink H 33
Berry RJ 55
Bistolfi F 51
Boedker A 47
Breur K 33
Brown JM 54
Brule JM 21
Buckner CD 39
Buckner CD 40
Buckner CD 41
Bullard DE 6
Burgers JMV 37
Cai WM 22
Calitchi B 24
Caracciolo F 34
Carbone A 46
Chin LM 2
Clark RM 4
Clift RA 39
Clift RA 40
Clift RA 41
Cohen L 53
Coleman CN 54
Cosset MJ 21
Coucourde F 14
D'Errico G 14
Dalby JE 28
Dalby JE 31
Damia E 21
De Paoli A 46
Doyle FH 8
Duncan W 10
Dutreix J 21
Fix I 3
Franchin G 46
Freitag G 48
Freitag J 48
Furst H 30
Galligioni E 46
Gallipoli A 14
Ganzer U 26
Granstrom M 27
Grigoletto E 46
Gruber F 25
Gu XZ 22
Guichard M 50
Gunderson LL 11
Gutin PH 6
Hackman R 39
Hagland S 27
Hahn EW 44
Hald A 47
Hammer C 25
Hart G 33
Hartgrink-Groen 37
Hersman J 40
Hersman J 41
Hibbert J 31
Horiuchi J 20
Horiuchi J 5
Hosobuchi Y 6
Hu YH 22
Huang SC 23
Hudson GV 38
Hunter RD 19
Iguchi H 32
Jacobson LH 3
Jacques S 6
Jelliffe AM 38
Joplin GF 8
Kanda K 49
Kaplan WD 2
Kazem I 37
Kerr GR 10
Kim JH 44
Kimbrough RC 15
Kobayashi T 49
Kogelnik HD 16
Kopelson G 11
Kopelson G 7
Koschel K 9
Koshel' IV 36
Kristensen D 47
Kuipers T 17
Landauer I 25
LeBourgeois J 24
Linggood R 7
Lundquist PG 27
Lynn TC 23
MacDonald WD 4
Maca RD 35
Mackay AR 6
Magri MD 46
Mahoney LJ 4
Malaise EP 50
Mamontov V 48
Mang W 25
Marx G 12
Mashiter K 8
Matsubara S 5
Mau S 30
Mazeron J 24
McGuffin R 40
McGuffin R 41
Mendel JB 2
Meyer-Breiting 26
Montemaggi P 34
Murray RM 9
Newaishy GA 10
Noordijk EM 37
Norman D 6
Ohtake E 1
Okuyama T 20
Okuyama T 5
Ostyn F 29
Panje WR 35
Pereira DT 19
Perevodchikova 45
Pierquin B 24
Pirtoli L 18
Pointon RC 19
Popot B 24
Qasim MM 37
Qi YQ 22
Qin DX 22
Raab GM 31
Ramadan MF 28
Ramadan MF 31
Read GA 10
Reichel G 48
Reid JG 4
Roncadin M 46
Rottoli ML 18
Salama M 21
Sale GE 40
Sale GE 41
Sanders JE 39
Sanders JE 40
Sanders JE 41
Schneider JJ 3
Schuman ES 15
Seidner W 30
Seifart W 12
Shibuya H 20
Shibuya H 5
Siddon RL 2
Singh SD 28
Singh SD 3
Sizoo W 3
Somers R 3
Stell PM 2
Stell PM 3
Stewart PS 3
Stewart PS 4
Stewart PS 4
Storb R 3
Storb R 4
Storb R 4
Sugawara T 3
Suit HD 4
Sullivan ES 1
Sullivan KM 3
Sullivan KM 4
Sullivan KM 4
Suzuki H
Suzuki S 2
Szepesi T 1
Takeda M 2
Tanaka O 3
Telycenas A 4
Thomas ED
Thomas ED
Thomas ED
Tirelli U
Toonkel LM
Trodella L
Trott KR
Trovo MG
Tsyplenkov VG
Tu GY
Tu SM
Tumolo S

Turriziani A 34
Van Den Bogaert 29
Van Der Schuere 29
Van Unnik JAM 37
Veronesi A 46
Vialushkin BIa 36
Vosteen KH 26
Wagener DJTh 37
Wallach CB 3
Wassif SB 13
White MC 8
Wigg DR 9
Wilkinson RH 4
Wu XL 22
Xu GS 22
Yan JH 22
Yarnold JR 38
Zimmerman RE 2

CLINICAL TREATMENT OF CANCER; Radiation Therapy

☆ U.S. GOVERNMENT PRINTING OFFICE: 1982-381-847:205

CANCERGRAMS are distributed for the International Cancer Research Data Bank (ICRDB) by the National Technical Information Service (NTIS). **CANCERGRAMS** are available from NTIS on a standing order basis at $2 each for North American Continent addressees and $3 each for other addressees. An NTIS deposit account is required. For a list of subject categories or other information, please write to:

Subscription Section
National Technical Information Service
5285 Port Royal Road
Springfield, VA 22161

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Va. 22161

OFFICIAL BUSINESS

Penalty for Private Use, $300

PRINTED MATTER

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211

THIRD CLASS
BULK RATE

CT-15

NOTICE OF MAILING CHANGE

☐ Check here if you wish to discontinue receiving this publication.

☐ Check here if your address has changed and you wish to continue receiving this publication. (Be sure to furnish your complete address including zip code.)

Tear off cover with address label still affixed and send to:

Computer Support Center
ICRDB Program
IIT Research Institute
10 West 35th Street
Chicago IL. 60616